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Half a Century of Medical Progress

THE PROGRESS OF INTERNAL MEDICINE DURING THE PAST HALF CENTURY.

REYNOLD WEBB WILCOX, M.A., M.D., LL.D., D.C.L.,

FORMERLY PROFESSOR OF MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, AND PRESIDENT OF THE AMERICAN COLLEGE OF PHYSICIANS,

New York.

In recording the advances which have been made in internal medicine it must be remembered that even this designation is of recent date. Space forbids that mention can be made of more than the salient matters even in the two divisions whose history lies entirely within the period mentioned—infectious diseases and those of the ductless glands.

The infectious diseases, long recognized as of group incidence, individually were usually placed with other diseases of the physiological system in which their chief symptoms were the main characteristics. During the period covered by this review their microbic causation has been recognized and a new group of nosological entities established. In fact the development of this classification has resulted in practical methods of prevention and treatment of untold value. From the interesting microscopic fields of bacteria stained by coal tar dyes, for which they have an affinity, to the eradication from continents of certain diseases is an enormous advance, yet this is an accomplishment within the observation of scientists who have served their time and generation for two score of years.

In enteric fever not only has the causative agent been discovered, but its mode of transition, especially by flies, demonstrated and the methods of cure established. But of far more importance, vaccination is now possible which in success approaches very nearly to the almost absolute immunity of Jennerian vaccination. During these studies our knowledge of immunity both natural and acquired has been advanced, and experimentation bids fair to solve many bio-chemical problems which now are merely working hypotheses but nevertheless are of great practical value. Nations with but slight incidence of this disease, armies free from an historical scourge, and individuals living in health under unfavorable environment are medical actualities only made possible during the past half century.

Paratyphoid fever, a disease of short duration and low mortality, has been differentiated from enteric fever, and vaccination contemporaneously with antityphoid vaccination is entirely successful. Typhus fever, though of gradually decreasing incidence, is now capable of complete eradication since the role of the body louse as a carrier has been recognized. Endemic typhus fever, a disease of moderate severity long recognized as existing in various sub-tropical countries, is now known to be present in higher latitudes. Of local diseases Rocky Mountain fever and intermittent tick fever have now been described and their cause ascertained. Malta fever, a recent introduction to the United States, has been so carefully studied that its mode of transmission and differential diagnosis are comparatively easy.

The cause of relapsing fever is now well known, and the symptoms and signs are explainable from a knowledge of the life history of its *spirachaete*. Yellow fever having been prevented by applying the results of study of the life habits of its usual carrier, the *stegomyia* mosquito, one of the great scourges of tropical and sub-tropical areas is likely to disappear. The progress of our knowledge has made human life in the tropics safe with incalculable benefit to industry and commerce. The various epidemics of influenza which have devastated the world for four centuries have resulted in much conjecture as to the cause and nature of the disease. The discovery of its bacillus, a score of years ago, has not been so productive of progress in diagnosis and treatment as had been expected, possibly because the bacillus is symbiotic. Dengue, a disease of sub-tropical countries and occasionally met with beyond its usual habitat, in the failure of an established bacteriology, yields to the modern use of salicylates added to the old established gelsenium. Cholera has now a well defined causative agent, the comma bacillus. The symptomatic treatment by hypodermatocysis gave excellent results in the last invasion of this country. Vaccinations have been practiced upon a large scale elsewhere, but the results have not as yet been entirely satisfactory.

Malaria, in its various manifestations, is now *res adjudicata* owing to the demonstrated facts in regard to the *anopheles* mosquito as a carrier, the life cycle of the plasmodium both in the intermediate host and the victim, and the correct interpretation of the symptoms based upon this renders possible the administration of quinine, and occasionally of arsenic, with scientific precision. The knowledge of the habits of the mosquito decrees its extermination, thus rendering prophylaxis a purely hygienic problem. Although quinine had been recognized as a specific for two centuries, it is only within the last four decades that its employment has been based upon

logical conclusions which have been developed after intensive study of the entire problem. Thus another scourge of warm climates has been conquered. The plague is no longer the dread destroyer of communities, not because the specific treatment has been satisfactorily developed, but since the rôle of the rat and his fleas as carriers has been understood, prevention of individual incidence and limitation of areas of contagion are now practicable.

In diphtheria, the discovery of its causative bacillus and its isolation and cultivation have resulted not only in the probability of accurate diagnosis, but as well—through the production of its antitoxin—of cure. Not only this, but active immunization is a matter of routine practice, and the determination of susceptibles rendered easy, by the application of the Shick test. It should not be forgotten that the great value of intubation as developed by O'Dwyer, in instances of laryngeal diphtheria, antedated the use of antitoxin. Of mumps little need be said save that emphasis should be laid upon its importance when larger numbers of young adults, who are not immune, have been assembled. Whooping cough now bids fair to be more satisfactorily treated since the discovery of the Bordet-Gengou bacillus, with the probability of preventive vaccination and serum therapy in the future.

Cerebrospinal fever has been intensively studied, and since the discovery of its diplococcus there have been expectations of an adequate serum therapy which, however, have not been satisfactorily realized. In prophylaxis some advance has been made in the observation of the possible portals of entry. In erysipelas but little can be added to previously existing knowledge beyond the demonstration of the *streptococcus erysipelatis* as its cause and its treatment by colloidal silver or solutions of ichthyol.

Acute articular rheumatism is undoubtedly of microbic origin,—some one of several species of pathogenic micro-organisms. The modern treatment by the salicylates in sufficient dosage is thoroughly satisfactory, always bearing in mind that the form of the medicament must be such as to spare the heart, kidneys and stomach from injury.

In septicæmia and pyæmia beyond an understanding of the causative pyogenic organism and the course of the infection, but little progress has been made. The varieties of streptococci are so numerous and the difficulties of preparation of effective serums so great, that disappointments are to be expected in a considerable proportion of instances. The importance of local lesions in producing widespread manifestations should be emphasized.

Hydrophobia is undoubtedly more rare than is generally believed. There is no doubt of the existence of rabies in dogs and other animals, and exact diagnosis is possible. In human beings the diagnosis should be carefully established, but it is to be regretted that the Negri bodies have not fulfilled expectations as to their value. The Pasteur treatment applied with all the precautions which have been formulated has statistically yielded most satisfactory results. Tetanus no longer is of the sinister prognosis of the past. Preventive vaccination, timely and properly performed,, yields brilliant results. In the presence of the disease intraspinal injections of magnesium sulphate are now in vogue.

Although the discovery of the anthrax bacillus antedates the period covered by this review, the practical application of this discovery, namely the development of effective serum therapy, is recent. Of note also is the record of hitherto unrecognized sources of infection and the safeguarding the spread of it. Actinomycosis is now of known causation and its treatment is reasonably satisfactory.

Gonorrhœal septicæmia and pyæmia have received the attention which is due to serious diseases and the far reaching consequences of primary local infections properly appreciated. The treatment with hyriodic acid was an advance, but further progress has been realized from the employment of vaccines.

Syphillis in all of its protean forms is now readily recognized by the positive Wassermann and analogous tests. The widespread incidence of the disease and its effects upon posterity are now duly appreciated. The hopes for speedy and absolute cure by massive doses of arsenic by the intravenous route have not been fully realized, but the prognosis has been more than satisfactory and in conjunction, in some instances, with the time-honored use of mercury and the iodides, a complete and permanent cure can be confidently expected. The more hopeless later manifestation, as paresis and spinal tabes, have been, ameliorated by local application of special preparations of arsenic or mercury.

Tuberculosis is apparently gradually diminishing in incidence and fatality, due probably to its earlier recognition and the more intelligent treatment of the disease. Special or specific treatments have not met with the expected success. Certainly the knowledge of how to safeguard the individual against infection and of how most effectively to manage the patient and thus to control the disease has resulted in real progress. Certainly the only form, which presents absolute discouragement, is acute miliary tuberculosis.

In pneumonia a real advance has been made by the four group classification, at least in prognosis. One of these groups is apparent amenable to serum therapy. The delay in establishing the group to which the particular form of the disease may belong is a disadvantage in a disease prone to rapid development, and by no means are the mechanical, especially circulatory, problems to be ignored. Apparently the majority of all alcoholic subjects who may acquire this disease are condemned to death by the operation of the Volstead Act.

Leprosy can now be accurately diagnosticated by its characteristic bacillus. But little has been added to its treatment, but recent investigation into the chemical composition of chaulmoogra oil bids fair to result in a preparation which shall be effective and yet possible of prolonged administration. Measles occurring in groups of susceptible young adults becomes serious, especially from the respiratory *sequelæ*. The importance of prolonged exposure to sunlight in preventing its spread and diminishing the virulence of the disease has lately been emphasized. Smallpox is now of comparatively little importance owing to the extensive employment of Jennerian vaccination. The latter is now standardized as to manufacture and technique, and the only argument of the anti-vaccinationists has now fallen to the ground.

Of the constitutional diseases, the classical description and treatment of gout left but little for further elucidation. But in relation to faulty metabolism not only in this, but as well also in purinæmia, the significance of the amino-acids, the distinction between endogenous and exogenous uric acid, and the use of phenylcinchoninic acid when the findings of blood chemistry indicate that uric acid exists in blood above the threshold are distinct steps towards progress. Here again the salicylates are distinct adjuvants to colchicum.

In diabetes mellitus the more closely related pathological symptoms and signs due to the pancreas have of-

fered a sounder basis for treatment of this condition which, although of diverse causation, is in reality a disease entity. Of note in real progress is that a too rigid diet along the classical lines does not tend toward either the benefit of the patient or the avoidance of coma. Nor indeed is the additional amount of fats, as usually prescribed, devoid of danger. As for the nutrition of the patient the extent of carbohydrate tolerance must be established and ingesta kept within this limit, but this tolerance must be increased by every means at command. While the specification of the amount of food, to some extent, should be regulated by its caloric value, in practice this is by no means an absolute rule. Equally failing of universal application are the various methods of starvation more recently of some vogue. While these theories of feeding, or the lack of it, are susceptible of benefit in some instances, careful selection of patients and departure from absolute rules tends to the benefit of the individual. The urinary glucose in relation to the severity of the disease and the condition of the patient is of far less significance than the blood sugar, and not to be neglected are estimations of the acetone bodies, oxybutyric and di-acetic acids, in both the urines of digestion and fasting. Of note are the cardio-vascular signs of the disease and their contributing factors in its progress. The rapidly increasing incidence and the mortality percentage with reference to other diseases, if the results of statistical inquiry are trustworthy, are appalling. Should the former of these continue we shall indeed become a diabetic nation. The extra-ordinary consumption of cane sugar calculated upon a *per capita* basis has now nearly reached the limit of hepatic tolerance. Intensive efforts must be put forth to lessen the evil result of America's "sweet tooth", to the end that sugar ingestion must be reduced either by education as to its danger or by the substitution of other condiment, as for instance saccharine. The dangers of excessive feeding with cane sugar are great and immediate, and progress in the treatment of diabetes has not kept pace with the incidence of the disease.

The various chronic conditions usually grouped, for the lack of a better description, under the designation of rheumatism, are with great probability manifestations of chemical pathology in metabolism. Here blood chemistry will make further differentiation possible and lead to corresponding advances in prevention and treatment. In these instances serious clinical study with the aid of conscientious and skilled laboratory workers will lead to more satisfactory results.

In obesity the rigid dietary restriction of former days have largely been abandoned with the adoption of a more scientifically balanced regimen. Coupled with intelligent rules for exercise and normal living the present status of treatment is satisfactory. Various specific treatments have had their vogue and have been abandoned because of their danger or inefficiency. In the hands of charlatans they have been successful only so far as they made the patient ill (thyroid substance, organic acids).

In the prevention and treatment of scurvy a real advance has been made in the appreciation of the fact that it is a deficiency disease, as is beri-beri. While the administration of the juices of the citrus family has yielded brilliant results in the past, the hypothesis of the vitamines, and the selection of foods based upon this, will place the entire subject upon a firm foundation. Infantile scurvy (Barlow's disease) has occurred with increasing frequence *pari passu* with the use of artificial infant foods. Now that the disease has become readily recognized and the special causative factors understood, its incidence will undoubtedly diminish. In rhachitis but little is to be added to the time-worn literature, except that it should now be classified among the deficiency diseases; and the vitamine theory gives at once its probable prevention and great encouragement for a successful therapy.

Among the intoxications the occurrence of methyl alcohol poisoning and its increasing frequence, and its importance in causing blindness and even death, has been fully emphasized. The methane poisonings (sulphonal and trional) have been observed shortly after the introduction of these remedies, and with them the appearance of the urine of hæmatoporphyrin (the iron-free products of the decomposition of hæmoglobin), an absolutely characteristic sign. Acute veronal poisoning is becoming of increasing frequence, and it is alleged that deaths from suicidal attempts have been produced. In chronic morphine habituation much progress has been made in treatment, but no specific treatment has yet received the professional confidence which was expected upon its introduction. When the fact is realized that the *habituè* is really suffering from disease induced by its persisent use and that this disease must be studied and treated in the same manner as the other ills in the domain of internal medicine have been, the first real progress in alleviation of the patient has been made;—already the work done promises that permanent cures can be brought about. It is claimed that cannabis indica poisonings are increasing in frequency of late years, and that it is employed by *habitués*. Experience seems to indicate that neither of these statements are facts. Cocaine poisoning is not only of recent incidence but of vast importance owing to its use by the underworld. The medical treatment is far from satisfactory, but the profession has become thoroughly aroused as to the importance of care in its legitimate employment. Tyrotoxicon poisoning has been differentiated from other causes of food poisoning, and its recognition and treatment are satisfactory. Undoubtedly the most important advance in this group of diseases has been the recognition of pellagra, with its characteristic dermatitis, diarrhœ, debility and even dementia, which has become recognized as a scourge of our Southern States. While in spite of intensive study there are yet many obscure phenomena still to be elucidated, yet the disease itself can be largely prevented and satisfactorily treated. Of interest is the recent work upon various hitherto unemphasized poisonings, among which may be mentioned those of carbon monoxide, especially in its remote effects (illuminating gas, combustion products), trinitrophenol, and chronic carbon bisulphide, which is occupational, but since preventive measures have been adopted these have become rare. The intensive employment of poisonous gases, especially chlorine, lachrymal, phosgene and the barbarous so-called mustard, during the world war, afforded opportunity to acquire knowledge not only of their immediate but also of their remote effects, methods of preventing these, and the most satisfactory methods of alleviating the results of exposure to them. Real progress has been made in both of these directions.

Chronic alcoholic poisoning is still an urgent question. Specific treatments have been exploited only to pass into oblivion. Yet the question is more urgent than ever owing to the attempted enforcement of prohibition which has not made for tem-

perance. So long as the enforcement of legislation which exceeds the boundaries of constitutional amendment is in the hands of ignorant, vicious, or fanatical politicians, there is little hope that the incidence of alcoholism will be diminished. There is need of investigation and intensive study by scientists of the highest moral character (of whom there exists an abundance) in order not only that real temperance can be secured, but the use of alcohol as a mendicament may be safeguarded. The highest therapeutic authority asserts that it is a remedy of great value in a limited field, and for which no other substance can be advantageously substituted.

In diseases of the alimentary system the "stomach specialist" *per se*, with his panacea—sodium bicarbonate—has come and gone. The same may be said of dyspepsia, although even at present some operators advocate surgical treatment with assurance. The diseases have been radically differentiated until terms unknown to our fathers are in common use. This more significant classification is now possible through the knowledge which has come from work by the chemists, physiologists, and physiological chemists. The functions of the stomach as determined by test meals, examination of its contents, tests of its motility, observance of its anomalies of form and position, and of the nervous phenomena both sensory and motor, have resulted in a new classification in which the catarrhs and ulcerations play a subordinate *rôle*. Local treatment now plays a prominent part and diet is now directed with more intelligence. New terms suggest therapeutic measures as achylia gastrica, hyperchlorhydria, gastrosuccorrhoea, gastroptosia, and the two forms of ectasia.

As for the intestines, explorations even in the duodenum and sigmoid flexure are at our command. The anomalies of motility and secretions are readily determined and enteroptosia has received due attention. The chemistry and bacteriology has progressed to the point from which an intelligent therapy can be directed. Such terms as indicanuria, saccharobutyric putrefaction and acidosis, represent new additions to our knowledge, while *bacillus coli* infections are recognized and their importance appreciated. The catarrhs and ulcerations have been differentiated *(amœbæ or bacilli)*, and the dysenteries classified as to their causative micro-organisms. The sensory and motor neuroses, including membraneous enteritis, are well recognized. Vermes, cestodes, trematodes, nematodes, acarides and oxyurides no longer are the sole parasites recognized, but protozoa psorospermes and infusoria are observed and give an excellent basis for treatment. Among the vermes one which has received much study, the ankylostoma, because of such great importance in the economic life, especially of the Southern states, is now readily recognized and successfully treated by thymol.

In diseases of the alimentary tract the use of the Roentgen ray has given valuable, even indispensable, aid to diagnosis, and the more recently acquired knowledge of the digestive enzymes is a satisfactory basis for treatment. Modern gastro-enterology is practically the summation of recent advances in diagnosis and treatment, and rests upon the results of scientific endeavor of which the larger part falls within the period of this review.

The pancreas to-day, thanks to intensive study, is fairly well understood as to its functions which can be determined with reasonable accuracy, as to its diseases, especially as to the forms of acute manifestation which can be differentiated, and especially as to its relation to diabetes which is of so much practical importance. Historically, the discovery of the islets of Langerhans, the experimental production of diabetes by removal of the pancreas, and the discovery of the glycolytic ferments and the connection between these islets and glycosuria were the successive steps in the attainment of our present knowledge.

The diseases of the liver to which so much therapeutic attention was formerly directed have now been described and classified, and some terms are decidedly recent—as, for instance, chronic universal hepatitis (Pick's disease), pigmentary cirrhosis of hæmochromatosis *(diabète bronzé)* and hypertrophic biliary cirrhosis (Hanot's cirrhosis). Progress has been made in the separation of hepatogenous from hæmatogenous jaundice, the point of origin of so-called gall stones, the infections of the gall bladder, and the relationship of gall stone disease with pancreatic disease. Further to the established remedies employed, preparations of bile salts and the use of the salicylates have been added.

The blood is now readily numerically estimated as to its cellular contents and their percentage valuation, as to hæmoglobin percentage, as to the appearances of stained preparations of it, and as to sections and smears of the blood making tissue, bone marrow, spleen, and lymphatic glands. From these data great advances have been made, and conclusions of practical bearing upon diagnosis, prognosis and treatment deduced. In the secondary anæmies progress has been made in the availability of the newer preparations of iron, notably of the organic forms. Pernicious anæmia is still without definite ætiology, although recent study may throw light upon the subject. However, the improvement noted after ablation of the spleen may suggest that the prognosis in the future may not be so grave. In chlorosis, in addition to the time honored cure by iron, the importance of general hygiene and correction of the accompanying constipation has been emphasized.

In both myelogenous and lyphatic leukæmia, the Roentgen ray, judiciously and persistently employed, has yielded results formerly not to be hoped for. Doubtless Vaquez's disease (polycythæmia erythrocytosis megalosplenica), although very rare, is of interest as an addition to recent concepts of diseases. The purpuras have been carefully classified, and one at least (Henoch's) appears to belong to the angioneuroses. The hæmophilias have come into increasing importance because of comparatively frequent unfortunate results after the minor operations which are now so much in vogue. The use of calcium lactate, which is preferable to the chloride, is not only curative but at times preventive. It is more reliable than the other recent developments (gelatin, adrenalin or serums).

In our student days the ductless glands were supposed to be vestigal structures and of no known function. When diseased, they had received attention from Parry, Graves, Basedow (thyroid) and Addison (adrenals), whose names they bear. To-day it is known that they actively influence general metabolism as well as other major functions, and their study bids fair to revolutionize the whole subject of internal medicine. The *status lymphaticus*, long

recognized as a cause of sudden death, is now associated with the thymus; its absence has been noted in certain forms of idiocy, and infantilism is probably due to absence or perversion of its internal secretion. The thyroid is now associated with myxoedema, which can be experimentally produced and the cure of the disease readily accomplished; in this connection cretinism should be mentioned. The parathyroid having been removed, tetany or death ensues, and it has been demonstrated that the former may be averted by calcium salts.

As for the adrenals the discovery of epinephrin, which in two years was followed by that of adrenalin, has developed a substance of great therapeutic value. The pituitary has a demonstrable connection with acromegaly on the one hand and with obesity and (with consideration of the thymus) infantilism and progeria on the other.

Without mention of the supposed internal secretion of the ovaries and testicles, both of which have been the subjects of much adverse criticism owing to the flamboyant methods of exploitation of therapeutic and operative measures in certain quarters, it can safely be said that the actual functions of all of the ductless glands is still obscure, notwithstanding the vast amount of research which many and well known physiologists have devoted to this subject. From this pioneer work of the physiologist, to which should be added that of the internist, pathologist, pharmacologist and surgeon, the method of treatment known as organo-therapy or opotherapy has been developed. Exactitude of choice of substance and method of administration is relatively impossible owing to the obscurity of function above alluded to, so that this method of treatment, at present, is more or less impirical. Since the internal secretions and their hormones have been definitely connected with the general protective mechanism of the body, they form the systemic immunizing mechanism of the organism. In reaching this conclusion so pregnant with probabilities that internal medicine as a whole will be completely revolutionized, Sajous for more than a score of years has by his conscientious labors, analysis of all reliable data derived from all sources—medical and auxiliary,—and from coordinated syntheses of all factors entering into the problems, reached conclusions which have filled many obscure *lacunæ*, and bid fair to make a logical whole of what now, in medicine, is decidedly chaotic. While these hormones are the active defensive agents and their efficiency controlled by pharmaco-endocrinology, yet it may be that these same harmones may so increase the proteolytic activity of the digestive enzymes (defensive ferments) as to cause them not only to destroy pathogenic agents, bacteria, toxins, and certain other poisons, but also the blood cells (hæmolysis) and even the tissues themselves (autolysis). The recognition of this long continued and constructive work has been recognized by the establishment of a chair of endocrinology at the University of Pennsylvania, where he, as professor, with additional facilities may continue to add to the resources of scientific medicine. The forthcoming new edition of his work will furnish the secure foundation upon which endocrinology of to-day rests, and be the starting point for the intensive development which bids fair to be the greatest advance in the history of practical medicine.

As, for the spleen, aside from its functions as a ductless grand which are not well understood, the debatable questions concerning splenic anæmia have been measurably cleared up and primary splenomegaly may be reported as the initial stage of which Banti's disease (splenomegaly with hepatic cirrhosis) is the terminal. However much our knowledge has advanced, it is more satisfactory from the academic than the therapeutic standpoint.

In diseases of the circulatory system an excellent foundation was laid by Withering who pointed out the indications for the use of digitalis, which are to-day excellent guides in practical work, and the various prize essays of the elder Flint in which the signs of valvular defects were classified so that an accurate estimate could be made of the mechanical problems to be solved. In our period the epoch-making work of Mackenzie was the starting point for cardiology as we understand it. The use of polygrams, however, obtained, and especially of the electrocardiograms employed in conjunction with the Roentgen-ray has done much to advance our knowledge of the disturbances of rhythm and of the efficiency of cardiac muscle, and the innervation of the heart has become better known. During this period in addition to digitalis, remedies of the same group as strophanthus, apocynum and erythrophlœum, and to a lesser extent adonidin, and the aconite group, which includes veratrum, have been carefully studied in the laboratory and the clinic, and the special indications for their use accurately determined. The mechanical problems of an abnormally acting heart are to a large extent capable of satisfactory solution. The results of the administration of digitalis can be demonstrated by use of the electrocardigram, and it can be safely said to be specific in auricular fibillation. There yet remains to be done just as painstaking work with the other cardiac remedies, checked up by means of the newer instruments of precision, in order that absolute clinical indications for their use shall be available.

Arteriosclerosis has received unusual attention, especially during the last two decades partly because of the widespread results of its existence in other structures, notably the kidneys, and partly from the more extensive use of instruments designed to measure blood pressure. If one may judge from current literature the same enthusiasm is being manifested for the sphygmomanometer as marked the use of the clinical thermometer in the earlier days. Then fever was a pathological entity which should be combated by remedial measures, and much time elapsed before the indications of the thermometer were generally accepted, not as guides to treatment but as incentives to search for the cause of abnormalities of body temperature and to direct endeavor toward their removal. Thus the sphygmomanometer registers the variations from the presumably normal blood pressure for the individual and initiates an investigation as to the causes of the departure from the normal, and the latter are the objects of remedial efforts. High blood pressure, no more and no less than fever, is in itself a point for treatment, but is merely a starting point on the road to a basis for diagnosis. In the control over the caliber of the blood vessels the nitrites and substances acting as nitrites are valuable additions to our armamentarium of comparatively recent introduction. To our pharmacological knowledge of the entire series and their special properties, Leach has made substantial contributions.

In the blood itself, its cellular contents and their percentage variations, substantial knowledge is now

extant not only as to what may be assumed to be normal, but as well the diagnostic and prognostic conclusions to be deduced from competent examinations. Blood chemistry in the hands of competent and earnest workers will doubtless contribute much to our knowledge, but its technique must be standardized and perfected before valuable conclusions are available.

From diseases of the respiratory system many have been separated as infectious or at least communicable. In hay fever, so-called, substantial progress has been made in determining its causation, and in searching for the toxin specific for the individual and in producing an active immunization, and these have been accomplished with marked success. In acute bronchitis the brilliant results from the administration of apomorphine hydrochloride, in expectorant doses, constitute an important recent advance. As for the chronic variety emphasis has recently been placed very properly that it is the patient and not the disease which is really important. The symptom asthma has been the subject of much study, and modern investigations lead towards seeking a cause in either the circulatory, respiratory renal, or possibly nervous systems, and the results of this search, if the causes are remediable, lead to more successful treatment.

Broncho-pneumonia is very largely secondary especially to the acute contagious diseases of childhood, and in later life to certain infectious diseases, and from these conclusions recent advances have been noted. The various conditions formerly grouped under the term cirrhosis (sclerosis) of the lungs have been differentiated, and to some extent the various causes evaluated, and the same may be said of emphysema. Gangrene and abscess have been carefully studied and improvement in diagnostic and operative technique has resulted in a successful outcome in many instances. The pleurisies have been separated as to their causation and character of the contents, and with marked improvement in the results obtained. The chylous and pseudo-chylous fluids found in the thorax, rarely it is true, and often mistaken for the purulent, have attracted much attention since Quincke in 1875 attempted a classification, although but little has been developed in the line of treatment.

Although tumors of the mediastinum are of the greatest importance and interest, and a mass of information has been accumulated in recent years, still the difficulties of diagnosis and especially of treatment are great, and the advance in our knowledge is chiefly academic.

In diseases of the kidneys marked improvement has been made, not only in increased knowledge of their physiology but as well in classification of the diseases affecting them. The classical work of Bright postulated practically three forms, differentiated largely upon gross appearances. For some years the classification of Senator which appealed to the clinical observer as well as to the morbid anatomist was in vogue, although palpably unsatisfactory. The present grouping of renal disease, based largely upon their ætiology and pathology, is adequate, especially from the standpoint of the clinician. (*See* MEDICAL TIMES, Vol. XLIX, p. 10). Not only is the cause of the disease which may afflict the patient of importance, but the perspective of the true inter-relation of heart, blood vessels and kidneys, as a guide not only to prognosis but also to treatment, necessarily is borne in mind. This is of especial importance on account of the increased incidence of cardio-vascular renal diseases. While we may safely assert that the cause of uræmia still remains unknown, the symptoms have been more accurately described, and the difficulties of diagnosis correspondingly lessened; but the treatment of this condition leaves much to be desired, although lumbar puncture, employment of the nitrites or inhalation of oxygen are recent additions to our resources. The development of blood chemistry has increased our information as to permeability of the kidneys, not only as to substances normally excreted, but as well to abnormal materials; of the former chloride or nitrogen retention, and of the latter glucose, are examples. While urinary examinations have been perfected in technique, both chemical and microscopical, their importance becomes relatively less as blood chemistry shall become accurate in technique and its findings correlated with observed symptoms and signs. When this end has been reached a great improvement in treatment may be confidently expected. The introduction the theobromine-sodium salts for the upper, and of hexamethylamine and its salts for the lower urinary tract has added materially to our resources.

The doctrine of the *péché originel* of urinary lithiasis still obtains, but at present the ascertained facts as to ætiology and the familial relationships of uric and oxalic acid are at least based upon a workable hypothesis, and the fundamental indications in the line of prevention are satisfactory.

In diseases of the nervous system great progress has been made. The concept of system disease of the spinal cord as degenerations rather than as inflammations, and the search for associated and causative agencies, has been productive of a more intelligent therapy. The working out of motor areas and a carefully conducted study of the motor tracts, and an intensive analysis of focal symptoms has resulted in more accurate diagnosis as to both diseases and tumors. The aphasias have been classified and their relationships established. The importance of luetic diseases has been emphasized, and their treatment now rests upon a more satisfactory basis. Neurasthenia and psychoasthenia are modern terms, and the traumatic neuroses and psychoses are brought within the domain of realities, with probabilities of accurate diagnosis.

The neuralgias, including migraine, occupation neuroses, professional spasms and tetany are now approached with confidence in diagnosis and hopefulness in therapy. Hysteria is no longer a diagnosis assumed for lack of a more scientific one, or of none at all. Paralysis agitans and chorea, and affections simulating it, although their pathology may be said to be chaotic even now, have received so much attention that in the future they will doubtless be placed upon a more secure foundation even if the conclusions are based upon statistical data. The intensive study of epilepsy which has been carried out upon large numbers of patients under favorable surroundings has resulted in a mass of clinical observations, and some, perhaps meager, advances in treatment. The Tay-Sachs disease (amaurotic family idocy) is an item of modern nosology, interesting in that it is recognized, but hopeless in prognosis. Probably the most important advance to be recorded is the increasing employment of lumbar puncture for diagnosis and in therapy.

The psychology of our student days was solely a metaphysical psychology, totally devoid of any conclusion of practical bearings. The sphere of the alienist was simply to determine whether or not an individual

was or was not insane according to the legal or medical concept, assign a cause for the mental aberration, and observe his career after having provided for the protection of the patient and the community. The careful study of the somatic causes of deviation from the normal with recognition of grades of mental inferiority resulted in a classification which was a real advance. The development of psychology with employment of laboratory methods was along the lines of measurement of reactions, mostly quantitative, but also, to a much less degree, qualitative. Thus psychology is approaching a scientific foundation, and the alienist has become the psychiatrist of a larger field of usefulness and of great importance. The carefully carried out so-called intelligence tests made for better adaptation of individuals to their environment and greatly increased efficiency. They also aid in the elimination of individuals who are likely to be disappointing failures. The work of the trained psychiatrist is eagerly sought for in all phases of activity—military, commercial, penal, and judicial. Thus mental abnormalities are not to be considered apart from all other ills, even from those of the nervous system, but have come within the broad field of internal medicine and yield to intelligent diagnosis and increased confidence in management.

In diseases of the muscular system aside from the inflammations of various types, the dystrophies are of recent differentiation (pseudo-hypertrophic paralysis and juvenile muscular dystrophy, and that of the Landouzy-Dejerine types). Of the disorders of function, myasthenia gravis, myotonia congenita (Thomsen's disease), and paramyoclonus multiplex are recent additions to nosology. The hope of results from treatment is not encouraging, and doubtless future study will place some of these conditions in other categories.

The vermes infesting the alimentary tract have already received attention in this review. Progress has chiefly been noted in determining the relations of other parasites, notably the protozoa, to known diseases. Such are psorospermiasis, distomiasis (fluke disease), trypanosomiasis (African sleeping sickness) and kala azar. In trichiniasis the eosinophilia is not only characteristic but the number of eosinophiles is in direct proportion to the severity of the disease. Filariasis has been separated into four groups according to the different filariæ found; the filaria Bancrofti is believed to cause hæmatochyluria and elephantiasis Arabum. Dracontiasis (Guinea worm disease), the last of importance, is of known causation and its prophylasis and treatment are successful.

Not only have there been enormous additions to the science of medicine, but as well advances in the methods of study and equipment of the individual practitioner.

The progress commenced in 1871 when, at Harvard, the medical school became an integral part of the university, and connected the study of the underlying physical sciences with mental discipline, and both with undergraduate medical study. In 1882 post-graduate medical schools were established with their opportunities for supplemental medical education for those who had found deficiencies in their equipment or wished to become conversant with recent advances in the practice of medicine. Not only did these schools fulfil a real need, but their influence was most important upon the undergraduate schools in improving the scope and thoroughness of their instruction and in making use of clinical facilities. During this period various States gradually established a minimum requirement for medical information which must be possessed by the individual before he became entitled to practice his profession. This again improved the character and extent of the teaching in the undergraduate schools. In 1890 the American Therapeutic Society was organized when therapeutic nihilism was at its high tide. This has resulted in improved methods of treatment, and, while maintaining a healthy scepticism in regard to many proposed procedures, has engendered a hopeful and confident attitude towards the alleviation and cure of disease, based upon scientific observations and logical conclusions deduced therefrom. In 1915 the American Congress of Internal Medicine was organized to further the advancement of this special field. One method has already yielded brilliant results,—namely the holding of a clinical week at some medical center at which all teachers and practitioners give all the resources of their hospitals, dispensaries, and laboratories for observation and study by the members of the Congress.

In the same year the American College of Physicians was founded so that those who had been selected by their fellow internists in the Congress as worthy of recognition for professional eminence in having contributed, through the practice of medicine or by experimentation in the laboratory, to the prevention, relief, or cure of disease, should receive tangible recognition of their work by fellowship in the College.

While internal medicine, which comprises in its field the greatest incidence of diseases, and of greater variety and importance than any other division of the healing art, has made enormous advances during the period under review, not only in preventing but also in mitigating and shortening the course, and in diminishing the mortality of disease, yet we are deeply conscious of important problems yet unsolved. Cancer and other forms of so-called malignant disease have not progressed much further than the histological diagnosis in spite of the unremitting labor of countless scientists continued over long periods of time. Nor indeed has the accumulated results of investigation in all the subsidiary fields of science, even when correlated, yielded results of unusual practical importance for the victim of cancer.

The treatment of disease is the most important work of the internists from the viewpoint of the patient. We require as thorough, accurate, and conclusive laboratory investigations of the effects of climate, the various phenomena of the atmosphere as regards temperature, moisture and other qualities as they affect human life, of physical agencies, as electricity in its various forms of application, of the Roentgen and other rays, including radium emanations, of the effect of exercise and of diet, massage, of the functions of the endocrine bodies, and of psychological processes as those investigations which have been carried out for decades in the pharmacology. The investigator, assuming that he is competent, thorough and honest, is useful, even indispensable, in blazing new paths in the field of knowledge which may be of practical use. He is equally important in that he may place the methods and material, which have been employed empirically for treatment of disease, upon sure and broad bases. The day of morbid anatomy with the gloomy prognosis of the dead house has passed. To-day we strive to ascertain what disturbance of function produce symptoms and to determine during life how the body functions. In other words, anatomical considerations have largely been replaced by biological

conceptions and for this reason the laboratory has become of increasing importance. But the results of laboratory investigation must not be accepted without question; their value must be established upon actual employment in the practical work in the art of medicine; the clinician pronounces the verdict, and upon this the scientific value of laboratory conclusions must stand or fall. From clinical observation, we look to the laboratory for explanation, modification of judgment or rejection of experimental data, but we come back to clinical observation, and this is the basis of all advance in internal medicine. We, as internists, are justly proud of our achievements in the past half century, and with co-ordinated efforts along the lines suggested in this review we may confidently expect not only a new internal medicine but a satisfactory solution of some of our unsolved problems, and even that this may come to pass in the near future.

679 Madison Ave.

FIFTY YEARS OF SURGICAL PROGRESS WITH SPECIAL REFERENCE TO CURRENT PROGRESS.

WILLIAM FRANCIS CAMPBELL, F.A.C.S.,
Brooklyn, New York.

The history of the MEDICAL TIMES is contemporaneous with the antiseptic era of surgery. Two of the fundamental problems of surgery—hemostasis and anæsthesia—had been practically solved; Parè and Morton had been but forerunners paving the way, when in the early seventies, the giant figure of Lister loomed large in the surgical world. Before his advent surgery had been static, circumscribed, empirical; antisepsis opened a road that has grown ever wider, and is lost in distant horizons of infinite possibilities. Judged by what it has done for the human race, *antisepsis is medicine's master contribution.*

While antisepsis was an immediate boon to suffering humanity, it also disclosed vistas of possibilities not yet exhausted. As a direct descendent, the new science of Bacteriology and its allied branches was established; and of supreme importance, the way was opened for the study of "living pathology." Prior to antisepsis, surgery dared not enter till the last act of the pathological drama; its sole mission was to avert the consequences of the catastrophic climax. Nature did her own surgery; when she reached her limitations human hands with much trepidation tried to avert the terminal fatality. The study of "living pathology" rationally directed the investigator from the terminal to the initial manifestations of disease; to the integration of the abdominal viscera; to reflex symptomatology; hence recognition of the earliest symptoms of disease; an appreciation of the interdependence of the abdominal viscera, and the interpretation of reflex paint, were the direct result of clinical research stimulated by the antiseptic technique. Under this stimulus there evolved the early recognition and surgical treatment of appendicitis, gastric ulcer, gall stones, pancreatitis, and all inflamatory and obstructive lesions of the abdominal cavity. Much that hitherto had been considered amenable to medical treatment, and gynecological treatment, was recatalogued as an organic lesion curable by surgery. The control of wound infection was therefore the magic wand that opened the door of every cavity of the body, reclassified the medical and surgical disorder of the body, and made the surgeons' art pre-eminent.

While the evolution of the antiseptic technique occupied the first half of this period, the latter half is distinguished by three outstanding contributions.

Crile's principle of Anoci Association and its relation to shock has been the chief factor in refining surgical technique. Crile demnostrated that inhalation anæsthesia does not entirely desensitize the brain, that a part of the brain still responds to the trauma of operation and the handling of injured tissues; and in so doing, discharges energy in its futile effort to protect the injured part, which in time leads to vital exhaustion or shock. Furthermore this effect on the brain can be controlled by temporarily disconnecting the field of operation from the brain by means of local anæsthesia, and thus eliminate operative shock.

Thus as a result of Crile's contribution there evolved the Anoci technique, and even more important the Anoci Surgeon, whose expertness is imbued with a reverence of mind and a delicacy of touch that elevates surgery to the realm of the fine arts.

The beginning of the present century is distinguished by the notable contribution of **Roentgen who discovered in the x-ray** a form of energy that has revolutionized diagnostic methods. Not merely the osseous system but the hollow viscera have become accessible to sight. This discovery has eliminated much of the guess-work, and substituted an exactness of technique that rescues the treatment of fracture, the location of foreign bodies, the pathology of the viscera, from the inaccuracies of speculation, and furnishes a foundation of precise information.

The last great discovery of this era is the gift of Mme. Curie. With the advent of radium there is added to our therapeutic measures an agent of powerful and unknown possibilities. As yet the meager facts concerning radium are but gleamings from the surface; the real truths lie buried deep; yet the little knowledge of its effect upon malignant growths offers a tiny ray of hope that grows brighter with added experience.

Prior to this discovery the only treatment of cancer was early and adequate operation. The experience of a few years modifies this dictum. The present treatment of cancer is surgery plus radium, and with wider experience the drift of opinion is toward less surgery and more radium.

It is fitting therefore that the last fifty years—this "golden age" of surgical achievement should be crowned by a promise of hope in the efficacy of radium in solving the great unsolved problem of cancer.

Current Progress.

The Administration of Ether by an Intravenous Method. H. Quinby Gallupe, Boston, M. & S. J., May 12, 1921.—The author states that this method is of value in operations of short duration about the face and mouth and in cases of shock where fluid given to the patient is essential. The canula is inserted in the median basillic vein and there is injected a solution of 70 c.c. ether in a liter of isotonic salt solution at room temperature.

Ether—Oil Colonic Anaesthesia in Goiter Surgery. Walter Lathrop, **Am. J. Surg.**, Jan., 1921. This method is of value in fat patients, with short, thick

necks. Postoperative vomiting is reduced to a minimum and there is hardly ever any looseness or irrigation of the bowels. Two soaps suds enemata, one hour apart are given the night before operation, followed by a plain water enema the next morning; one hour before operation the patient is given—per rectum—two drams of paraldehyde and four drams of ether, thoroughly mixed in a small bottle and warmed. Twenty minutes later a hypodermic injection of ¼ gr. morphine and 1/150 gr. atropine followed thirty minutes later with three or four ounces of ether and two ounces of olive oil, warmed, slowly injected—one ounce per minute. The tube inserted five inches is then clamped, the clamp is removed when the operation is nearly completed, the fluid drawn off and the abdomen massaged; the bowel is irrigated with warm water.

Synergistic Analgesia. James J. Gwathmey, J.A.M.A., Jan. 22, 1921.—Gwathmey reviews the physical and physiological fundamentals of the colonic administration of oil and ether for the purpose of producing anæsthesia, and describes the new element of symergistic analgesia now being introduced. By synergism is meant the reciprocal augmentation of the action of one drug by that of another.

Two definite facts have been established:

1. When magnesium sulphate (1 to 2 cc.) is used with morphine (½ to ⅜ grain) instead of plain water the value of the morphine is increased from 50 to 100 per cent; that is, one hypodermic injection will do the work of from two to four. This knowledge is immediately available for physicians and surgeons who use morphine for any purpose.

2. Magnesium sulphate (6 to 15 c.c.) given by hypodermic injections two hours before operation followed by morphine sulphate hypodermically 1/12 to ⅜ gr.) one hour before the operation, when supplemented by nitrous exide and oxygen (the oxygen being employed in a much higher percentage than usual) gives a safer and better relaxation than when ether is used. Furthermore, synergistic analgesia is the logical evolution of general anaesthesia. Analgesia with consciousness is present oftener with colonic anæsthesia than with other methods of administering any of the general anæsthestics. This fact has been noted and commented on by every surgeon and anæsthetist who has used the method sufficiently to be familiar with the technic. Obviously, colonic anæsthesia was the first to be improved; and now an attempt is being made to improve anæsthesia for general surgery by synergistic methods.

Comment: The goal of anæsthesia has not yet been attained. Recent articles clearly indicate that the whole subject is in a state of flux with a drift away from inhalation anæsthesia with its complications, toward simpler methods. Gwathmey in his "Synergistic Anagalgesia," introduces a rich field for speculation. The abolition of inhalation anæsthesia and the introduction of some drug or combination of drugs that induces satisfactory surgical narcosis is an ideal of possible attainment. The author with Gwathmey's technique has performed herniotomies, appecdectomies and hysterectomies with perfect satisfaction, and believes that if it were possible to properly correlate dosage and patient, this method of narcosis would supplant both inhalation and local anæsthesia. The teachings of Crile emphasize the important fact that surgical sleep should begin in bed and not on the operating table; when these teachings are generally practiced the fear and worry of anticipating operation will be removed.

Comparative Results of Pyloroplasty and of Gastro-Enterostomy in Stomach Surgery. Byron B. Davis, **Am. Surg.** 73.450, April, 1921.—Davis believes that from 15 per cent to 40 per cent of the operations done for gastric ulcer are failures, as they do not restore the patient to sound health. Too often the poor results following gastro-enterostonies have been ascribed to faulty technic, to incorrect diagnosis, etc., when as a matter of fact the operation itself is at fault in that it brings about revolutionary changes in the physiology of the stomach. Moynihan sums up the prevailing symptoms complained of by these uncured patients as pain, vomiting, hemorrhage and diarrhea. It can be shown that any or all of these symptoms may and frequently are caused by altered hpysiology and by the stomach emptying at a point more or less remote from the general direction of the peristaltic wave and entering the intestine at a point not physiologically adapted to the function thus forced upon it. Davis considers the rational manner of dealing with the problem in excision or cauterization of the ulcer and enlarging of the natural outlet sufficiently to secure free emptying of the stomach and believes such operative procedures have been condemned without due trial. Davis thinks the pyloroplasty operation as done by Finney meets all requirements. All that is necessary is to make an opening large enough to function easily after the narrowing which comes with the decrease in size of a dilated stomach. Of course dense massive adhesions or thickening and infiltration about the pylorus contra-indicate this operation. Ulcer cases should be worked up carefully by the internist assisted by a competent surgeon so the patient may have the benefit of both points of view. Medical treatment should be given a fair chance before surgery is attempted. Davis believes active ulcers are best treated by cauterization. The appendix and gall-bladder should be removl, if abnorml.

Comment: The operation of gastroenterostomy for gastric or duodenal ulcer is far from satisfactory where only 20% of the patients are clinically complaint free. It is evident that the indiscriminate use of so beneficient an operation (when properly indicated) should be revised.

As a general principle it should be understood that gastro-enterostomy is not a cure, it is a compromise; it does not remove, it only palliates disease, and sometimes produces a pathology of its own—gastrojejunal ulcer. Horsley's teaching that uncomplicated duodenal or pyloric ulcer should be treated by pyloroplasty with cauterization or excision of the ulcer is sound; the pathologic condition is removed and normal stomach function is resumed.

Sphincteric Gastrotomy. F. D'Agostino, Arch. Ital. Chir., 3:285, Bologna, April 10, 1921.—The principle defect in methods of gastrostomy lies in the eventual dilation of the canal through which the drainage tube leads, rendering it incapable of holding the tube and ending in regurgitation of food. Chronic hideous eczemas of the skin about the opening, associated with intense itching and pain, are the result. The author offers his new method, so-called double-tuneling of the stomach, in an endeavor to eliminate these conditions.

Median lapartomy is made between the umbilicus and the ersiform process. After grasping the stomach near the cardiac end and mobilizing it when ad-

hesions are present, a good portion of the stomach is pulled out. To the right of the first incision a second incision of from 1 to 2cm. is made through the skin and anterior rectus sheath. The rectus muscle is then caught and a tunnel 3 to 4 cm. is made through half of the muscle, care being taken to liberate enough of the muscle bundle to secure a good blood supply. The stomach is drawn through and fixed with interrupted stitches, the serosa being sewed to the rectus sheath. A third incision of from 2 to 3 cm. is made to the right of the second and similar to it and the same manipulation of the stomach is carried out, so that it passes through the two muscle tunnels and the tip protrules from the third incision. All incisions are now sutured, only the tip of the stomach remaining uncovered. An opening is made through which an ordinary Nelaton catheter is inserted into the stomach and fixed at the mouth of the stomach wall with a purse-string suture.

The method has the advantage that it excludes regurgitation. The posture of the patient does not affect his well-being, the patient learning to compress with the rectus muscle that portion of the stomach passing through it. Another feature was the possibility of the stomach wall to withdraw, eliminating moisture and irritation of the surrounding skin.

Duodenal Ulcer in Infancy. D. W. Palmer, **Ann. Surg.**, 73:545, May 1, 1921.—Palmer believes that duodenal ulcer is "more unlooked for than uncommon." He studied forty-five cases taken from the literature and found that practically all showed a more or less marasmic condition. Of the forty-five cases studied, twenty-five were males with an average age of about three and a half months. In only ten cases was a correct diagnosis made or suspected. The ulcers of infancy may be single or multiple; they are usually just distal to the pylorus but may be as far down as the papilla of Vater. The majority of the ulcers are of the acute type. The prognosis is usually poor because of the associated nutritional disturbance present in the majority of the cases and the inability of such infants to stand the loss of even small quantities of blood.

Palmer then reports what he believes to be the first case of duodenal ulcer in infancy to be operated upon, and that successfully: a male baby, six months old, was breast fed for two and one-half months. In the first few weeks he began spitting up food once a day and continued this until it became a true vomiting. At two months he reached a maximum weight of ten and one-half pounds. Changes in the feeding formula seemed to have no influence on the vomiting. The child was marasmic and dehydrated. Hematemesis had not been noted. The *x*-ray showed a small, active stomach of normal motility. Because it was thought peristaltic gastric waves had been observed a tentative diagnosis of congenital pyloric stenosis was made. At this time the baby was six and two-thirds months old and weighed eight pounds, six ounces. Under ether anesthesia the abdomen was opened and no pyloric tumor was found. However, near the pyloric ring there was attached a tag of omentum plastered over an area of the peritoneum distinctly puckered as in the case in ulcers of adults. Because of the poor condition of the child a pyloroplasty was done. The child did well for a few days but the vomiting returned and became so bad that eighteen days later a gastrojejunostomy was performed. Following this operation the baby gained steadily and at the age of two years he weighs thirty-two pounds and is normal in every way.

Duedenal Ulcers in the First Decade of Life. Julius Alsberg, **Arch. f. Verdauungskh,** 27:398, No. 6, Berlin, 1921.—Alsberg reports a case of a child two years of age who showed, at operation, an old cicatrized ulcer near the pylorus and fresh inflamed injections. The whole intestine from jejunum to rectum was filled with blood. A gastro-enter-anastomosis was performed and the child recovered.

Alsberg discusses the literature, which seems to show that duodenal ulcer is not at all rare in childhood and that it occurs oftener during the first than during any subsequent year of life. Diagnosis is difficult and is generally made only at autopsy. There is a great lack of agreement as to the signs which should lead to the suspicion of duodenal ulcer in infancy. Alsberg agrees with Kuttner that even minimal amounts of bleeding from the alimentary canal should arouse the suspicion of gastric ulcer. Torday and Gallas are of the same opinion, and include also subnormal temperature and increased pulse-rate as indicative signs.

The choice of operation must often be left until the exact condition can be seen after exploratory abdominal section. Pretreatment is essential if there has been much bleeding. Transfusion of blood, or of some other material which will increase the coagulability of the blood, is strongly indicated. The prognosis is so unfavorable that success may be expected only with well-nourished children.

Thick Cereal in the Treatment of Pyloric Stenosis. L. W. Sauer, Iternat. Clin., 1:94, Series 31, 1921.—Thick cereal is not a panacea for pyloric stenosis for some cases do not respond to anything but surgery, but the majority of cases in infants recover without surgical interference.

The success of cereal treatment depends largely on its preparation and administration. The following formula is useful as a beginning and modification may take place as occasion demands.

Skimmed milk, 9 ounces; water, 12 ounces; farina or rice flour or barley flour, 6 tablespoonsfuls; detrimaltose, three tablespoonsfuls. Boil one hour or more in double boiler. The consistency is important; it should be thick.

The warm, thick cereal may be taken on the end of a tongue depressor placed far back in the mouth and scraped off with another tongue depressor. Two to six tablespoonsfuls of cereal may be given six or seven times daily. Four cereal feedings with three breast feedings may be tried if the first is unsuccessful.

Breast milk, if available, should replace cow's milk. Place child on right side after feeding, give water by Murphy drop metod or hypodermoclysis. It usually requires five to eight weeks before much liquid food can be given.

The author has treated 32 cases of pyloric stenosis and 24 recovered without operation; six died. Two cases are cited to emphasize the rapidity of recovery in favorable subjects. Recovery takes less time than with breast milk or a milk mixture.

Contraction of the pylorus may be the cause of a palpable tumore mass. Roentgen rays are helpful in deciding. If surgical interference seems justified (if the stomach contents remain four hours after feeding) it is well to give a test meal of thick cereal, not of milk mixture.

Special Points in the Surgery of Gall-Bladder and Ducts. G. W. Grile, **Illinois M.J.** 39:401, May, 1921. Also in **Wisconsin M.J.**, April, 1921.—Crile's laboratory research and clinical experience have shown that there is an essential dependence of the brain upon the liver and the consequent vital need of protecting and augmenting the internal respiration of liver cells. In all probability so-called "liver shock" so peculiar to gall-bladder operations, is due to the interference of the internal respiration of liver cells which prevent its functioning.

Crile reduced the mortality rate of his gall-bladder operation from 6.2 per cent to 1.6 per cent by employing the following measures: Nitrogen-oxid-oxygen, analgesia and deep anesthesia with same anesthetic only when required during operation; infiltration of surgical area with local anesthetic; handling liver as little as possible; warm pads to prevent cooling of viscera; sewing up wound with loose stitches to prevent needless pain; blocking wound with local anesthetic; applying heat to entire abdomen after operation; transfusion of blood at time of operation and after if indicated; large amounts of water by any or all routes (3000 to 4000 c.c. a day) to maintain the internal respiration of liver cells and to promote elimination of waste by-products.

Pre-operative Preparation of Patients with Obstructive Jaundice. Waltman Walters, **Surg. Gyn., and Obst.**, Dec., 1921.—This study was made for the purpose of investigating the reason for the high mortality following operations on patients who have obstructive jaundice. Only cases in which coagulation time estimations had been made were tabulated. The author's conclusions are as follows:

1. Most patients with obstructive jaundice who die after operation succumb from intra-abdominal hemorrhage.

2. In most cases post-operative hemorrhage occurs when the coagulation time of the venous blood is longer than nine minutes.

3. The coagulation time of the blood can be reduced greatly and the toxicity diminished in patients with obstructive jaundice by daily intravenous injections of 5 c.c. of a 10 per cent calcium chlorid solution for a three-day period.

Draining the Gall-Bladder by Instilling Magnesium Sulphate into the Duodenum. F. Newhoff, **J. Missouri State Med. Assn.**, 18:153, May, 1921.—The technic was copied from Lyon and Brown with certain omissions, either unessential or impracticable under the circumstances. All patients were fasting; the mouth and teeth were thoroughly cleaned with permanganate of potassium. A sterilized Rehfuss tube was passed into the stomach and by suction any contents were withdrawn and put aside for examination. Each patient was given 8 ounces distilled water to drink. The tube was passed into the duodenum by its own initiative, not pushed or retarded. In walking cases its entrance into the duodenum was ascertained by the use of fluoroscope; in bedridden cases, by means of suction attached to the tube. When certain that the tube had reached the duodenum, an instillation of 50 c.c. of a 25 per cent warm sterile magnesium sulphate solution was given followed by an injection of air. If after ten minutes no fluid had appeared the flow was started by aspiration.

The four cases cited were examined after cholecystectomy; in all these cases, the injection of magnesium sulphate brought the same amount of bile as with the gall-bladder intact; however, the bile was never acid, was lighter in color, more viscid, more transparent and of lower specific gravity in patients with normal gall-bladder, thus confirming Lyon's theory that an injection of magnesium sulphate drains the gall-bladder.

Two cases of suspected gall-bladder were noted in which, after treatment with this injection, improvement was so marked that operation was eliminated. In operative cases, the injection of magnesium sulphate confirmed the result of the above experiments. It must not, however, be considered as eliminating the necessity of relying on clinical symptoms in determining the necessity for an operation. It has a field of usefulness in the early stages when draining may obviate the dangerous condition of the bladder infection or formation of stones.

A New and Advanced Surgical Treatment for Breast Cancer. J. F. Percy, **Surg., Gynec. & Obst.**, 33:417, Oct., 1921.—Within the year the statement has been made that the limit in both operative technic and in surgical treatment of cancer of the breast had been reached. Rodman in his recent book says that the chance of a five-year recovery is 50% if the cases are seen early enough. The author considers this figure too favorable. The morbidity and mortality from recurrences both general and local can be reduced by observing the following points of technic: (1) to make all dissections including those of the axilla with the hot knife; (2) to abandon the attempt to save skin flaps in all advanced cases; (3) to undermine the skin edges from 2 to 4 inches with the hot knife; (4) to place the arm in an elevated position with the forearm on the head during the process of healing; (5) to give vigorous daily massage and forcible movement of the skin and arm adjacent to the denuded areas as soon as granulations have formed; and (6) to operate on all cases except those in which the metastases are inaccessible. It is in the class of cases listed as inoperable that this type of treatment sometimes gives the most brilliant results. The unheated knife does not devitalize any of the malignant tissue which it does not remove, it does not render the areas insusceptible to future metastases, but it does either stimulate or transplant any tumor tissue with which it comes in contact. The dissection as performed by the cautery kills all cancer cells which it touches and devitalizes those in its immediate neghborhood, at the same time that it seals off the lyphatic channels. The undermining of the skin accomplishes the same purpose and should be extensive in advanced adherent cases. During this operative technic the only instrument used is the cautery knife, and an occasional hemostat, which if used a second time is resterilized. The dissection is carried out through a wide elliptical skin incision with the breast as the center pont and one end in the axilla and the other near the umbilicus. The dissection of the axilla is begun at its apex and is very thorough. The operator's rubber gloved hands are frequently dipped into a weak iodin solution and gauze sponges touch the cut surface only once before being discarded. The arm when placed in the abducted and elevated position during healing prevents much of the troublesome scare tissue formation. The area is kept clean with Carrel-Dakin's solution or eusol and the massage and daily stretching of the skin edges encourage the development of a blood supply which causes new epithelial growth not only at the skin edges but often, after a

few weeks, over the surface of the wound as small isolated white patches.

Comment: The Halsted operation for cancer of the breast is by no means entirely satisfactory, since a removal of the cancer focus with the regional lymphatics disseminates the cancer cells by removing the barriers that prevent systemic invasion. When the lymph nodes are removed, the first line of defense is gone, and new avenues opened for permeation. The operation for cancer has reached its anatomical limits, and the results remain unsatisfactory. The use of the cautory knife is logical since it removes cancer tissue and at the same time seals off the lymphatic channels. A distinct advance will be made when the cancer focus only is removed by the cautery knife and the neighboring lymph nodes treated by radium packs of sufficient strength and screening to be effective. Experience proves that this technique is feasible.

Examination of the Blood in Cases of Cancer of the Breast in Regard to Operation and Prognisis. Ellen Davidson Anderson, **Glasgow M.J.** 13:402, June 1921.—The writer cites an additional number of cases of cancer of the breast in which blood examinations were carried out confirming the statements made in the first part of the article that every tumor which, independent of inflammatory complication, is associated with an increase in the number of white cells, is a cancerous growth, but the absence of leukocytosis does not justify one in excluding the diagnosis of cancer.

Cancer of the Tongue. C. Regaud, *Paris Medical*, 14:265, April 2, 1921.—Regaud limits himself to the discussion of malignant neoplasias of epithelial tissues. Histological examination is indispensable for their diagnosis. Until lately the results of Roentgentherapy and even radiotherapy were so disappointing in connection with epidermoid epithelioma of the tongue as almost to cause their abandonment. This was due to wrong method and not inherent lack of value. No time should be lost giving antisyphilitic treatment nor making Wassermann tests; their bearing on cancer is unimportant and the loss of time may cost the patient his life, if a competent biopsia has revealed cancer.

The incessant muscular activity of the tongue causes rapid diffusion. It has been a capital mistake to give radiotherapy at intervals instead of all at one blow as a surgeon would do his work if operating. Between the treatments the cancer has grown apace. It is a striking discovery that the sensitiveness of malignant tissue to radium grows less with each treatment, while that of sound tissue grows greater. Hence such treatments have tended to break down the latter, while the former increased in malignity. Radium puncture with platinum needles, given in small doses continuously for a week is the best of all treatment, and gives gratifying results. The needles should be charged with radium, not radium emanation, as the latter will lose its strength before the week is out. The dose must be given to the entirety of contaminated tissue, all at one time. This prevents its spreading. The dosage must also be equal at all points. The formula is: Dose—intensity X time of irradiation. A larger dose, less time, and vice versa. In practice, one focus of application is made for 2 or 3 cu. cm. of infiltrated tissue; each focus is given the smallest possible diameter and the greatest possible length, to augment the surface of the irradiation; the foci are to be as nearly equidistant as possible, in order to leave no point untreated. After an insufficient radiotherapy, spreading of cancerous tissues is more rapid than after amputation. In the immense majority of cases, if radium is to cure, it must be given all in the first treatment. Used in any other way, its results can at best be but palliative.

The Use of X-Rays and Radium Before and After Operation for Malignant Diseases. Robert Knox, **Edinburg M. J.**, 26:348, June, 1921. In *x*-rays and radium we possess most useful agents, of which extensive use should be made in the treatment of a large number of diseases. The value of such treatment depends upon the time at which it is administered, the nature and extent of the disease, and the response the tissues possess to stimulation. Many patients are reduced to the last point of resistance before they are treated. These cases fail to respond. The dosage may be massive at one sitting or divided over several days. Postoperative treatment of the wound area and lymphatic drainage after excision ot malignant disease should be thorough and systematic. After breast operations, it should cover the breast, axillary and supreclavicular regions. Treatment should be undertaken as soon as possible after operation; it may be carried out without disturbing the dressings. Recurrent nodules should be treated by radiation and after the nodules have disappeared treatment should be continued at intervals of three weeks for at least a year. Early recurrence in slow growing types of carcinoma is particularly amenable to *x*-ray treatment. All cases of cancer should be treated by the *x*-ray and radium treatment after operation. By *x*-ray and radium treatment inoperable carcinoma may be rendered operable at a later date.

Is the Surgeon of Experience Ever Justified in Violating the Recognized Surgical Technic in Dealing with Malignant Neoplasms? L. L. McArthur, **Surg., Gynec. & Obst.**, 33:406, Oct., 1921.—The teachings and principles of surgeons throughout the country are so dogmatic in regard to the treatment of cancer that it is dangerous for the individual surgeon to depart from them without running the risk of criticism or legal prosecution. Certain cases, however, justify the violation of these principles. A man, 55 years of age, operated on for carcinoma of the left side of the tongue, which had begun as a papilloma and which had recurred several times after removal with caustics and CO snow, showed no palpable glands. The prescribed technic called for a block dissection of the neck with at least excision of the regional lymph-glands. This was not done; however, despite local removal only, the patient is well eight years after operation. In a similar case a node was palpable, but since it had developed after the use of chromaic acid it was not excised at the time of operation. Prophylactic *x*-ray treatment was given for six weeks and the node gradually disappeared. The patient is well ten years after operation. Similarly, in the case of a young girl 15 years old there was a gradually increasing rounded tumor of the mental process which was removed by freezing and excision. The diagnosis of giant-cell sarcoma was made. The tumor shelled out of the bone with ease and no radical jaw resection was performed. The patient is alive and well several years after the first operation. In forty years of active hospital service the author has encountered less than 20 cases which have seemed to justify such violation of surgical teachings.

Surgical Treatment of Angina Pectoris by Resection of the Cervicothoraic Symphatic. Thomas Jonnesco, **Presse Medicale**, Paris, March 9, 1921.—In 1896 the writer practiced and proposed for the first time the total resection of the cervical sympathetic, together with the first thoracic ganglion, for the treatment of epilepsy and exophthalmic goiter. Later he applied the same operation to the treatment of glaucoma and migraine. Finally, in 1916, he had occasion to try it in a case of angina pectoris, the first and only case to be treated and definitely cured by surgical methods. He relates the case in detail and sets forth the manner in which resection of the cervico-thoracic sympathetic acts in this malady. The case was a typical one, and was definitely and permanently cured by a unilateral resection of this nerve and ganglion, and has remained without further trouble for over four years. Such a satisfactory result give shope that this new operation will find a place in surgical therapeutics, especially as medical treatment has been of no avail in this grave affection. His theory is that the symptoms of angina pectoris are caused by an irritation of the cardio-aortic plexus due to a constant lesion of the aorta; the reflex from this region gives rise to the severe pain and the vascular and motor phenomena that accompany the disease; in suppressing the connection between the cardio-aortic apparatus and the nerve centers by resection of the cervicothoracic sympathetic this reflex is prevented.

Painless Hypodermoclysis. Willard Bartlett, **Ann. Surg.**, Feb., 1921—The author advocates the substitution of a one-sixteenth of one per cent watery solution of novocain for saline solution in hypodermoclysis, maintaining that this has all the advantages of saline solution and is not painful. No dangerous or untoward symptoms developing as the result of this procedure have been observed.

The importance of Posture in Postoperative Treatment. Willy Meyer, **Surg. Clin.**, North America, 1 :283, April, 1921.—With the patient in the usual horizontal posture in bed after operation, with the head slightly elevated by pillows there is no place where circulation is more impeded than in the groin. This is due to a possible strain of Poupart's ligament, to the uphill course of the vein over the sacrum and to the pressure of the right iliac artery on the left common iliac vein. That femoral thrombosis occurs frequently in surgical cases may be explained by a transient blood infection, due to the introduction of an organism during operation, from which the body is not entirely free for several weeks. This sluggish circulation can be eliminated by raising the foot of the bed and thus increasing the velocity of the femoral venous blood by a down-hill run before it reaches the common iliac vein. A prolonged Fowler position is bad, since it has the opposite effect.

Following an operation for a perforated appendix, or ligation or a cystic duct stump after cholecystectomy, the slight Sims' posture favors drainage of pus, serum or bile by gravity. The author insists on this posture for the first eighteen or twenty hours; on the third day the patient may rest in the dorsal decubitus, and it is safe to raise the foot of the bed. After gastro-enterostomy the patient should be turned in a not too exaggerated Sims' posture with slight elevation of the head of the bed so that stomach drainage is encouraged through the gastro-enterostomy opening. In cases of septic peritonitis, when the Fowler position and rectal drip, as advocated by Murphy, are to be used, the author combines a Sims' and Fowler's posture. He has never been convinced that pneumonia is more liable to follow the compression of the right lung; on the contrary, aspiration of vomited material is practically prevented and he advises this posture for patients on the operating room stretcher wagon.

Comment: The value of the postoperative posture of the patient in directing drainage toward the pelvis or toward the diaphragm is not supported by physiologic or anatomic facts, since fluids are absorbed with equal rapidity from all parts of the peritoneal cavity. The value of the Fowler position does not consist, therefore, in its influence on drainage, but in the fact that it is a normal position of flexure, and therefore the position of greatest rest and comfort to the patient.

Summary: Current progress indicates an advance in a better appreciation of the physiology of the stomach, in that pyloroplasty is taking the place of gastroenterostomy. Operations for cancer are to be less extensive; the cautery-knife more popular; and radium is becoming a recognized therapeutic agent in the cure of cancer.

394 Clinton Avenue.

A REVIEW OF PEDIATRICS DURING THE LAST HALF CENTURY—A FEW OF THE MOST IMPORTANT DIAGNOSTIC AND THERAPEUTIC ADVANCES.

Louis Fischer, M.D.,
New York

During the last half century, many advances have been made in the care of infants. The reduction of intantile mortality has been largely achieved by prenatal care and by the hygienic and dietic supervision of the mother, during pregnancy.

Child life has been prolonged by the hygienic supervision of the milk supply.

Dairy hygiene, which implies the supervision of the cow and the hygiene of her milk, has given the public milk much less contaminated with stable manure, and with much less bacterial contamination.

About thirty years ago, sterilization of cow's milk was commenced, owing to the exhaustive studies of Soxhlet. By feeding sterilized milk, we found that many infants suffered with constipation. It was also felt that the active ingredients; such as the enzymes and perhaps the vitamines were killed by sterilizing milk at a temperature of 210° F.

Clinical observations demonstrated a higher nutritive value in milk that was only heated to 167° F. This was called pasteurized milk. The object was to kill all pathogenic bacteria and their spores. It was found that such was possible without altering the nutritive value of the milk when it was heated to 140° F. At the latter temperature, the tubercle bacillus is destroyed and the danger of transmitting tuberculosis is minimized. Milk today is heated for twenty minutes, at a temperature of 140° F.

Great strides have been made in the study of the metabolism of fat, carbohydrates and proteins.

In the treatment of premature infants, buttermilk feeding aided by dry milk has been used with great success during the last five years. No feeding yet devised can replace human milk.

When infants do not thrive, especially those with an irritable and over-acting pylorus, then human milk must be used. If after using human milk, pyloric

stenosis or pyloric spasm does not improve, then the case is a surgical one and no time should be lost and the case sent to the surgeon.

The Ramstedt operation has been a life-saver in hundreds of cases, and its simplicity has opened up a new line of therapy in continuous vomiting during infancy. When operated early, more than 75% recover. The great tendency of the last twenty years, has been to follow prophylaxis.

What vaccination accomplishes in preventing smallpox, immunization in diphtheria can also accomplish. The greatest epoch making and diagnostic and therapeutic discoveries are the following:

The Schick test is a great advance in determining the presence or absence of immunity from diphtheria in a given child.

Flexner and his co-workers have given the profession, a specific serum in meningitis. (Cerebro spinal meningitis.)

Pirquet has given the profession the cutaneous test which shows the presence or absence of tuberculosis, even though it is latent.

Quincke devised the spinal-puncture which has great advantages in differentiating the various types of meningitis, besides relieving intracranial pressure when convulsions are present.

We can easily thereby include or exclude tuberculous meningitis, cerebro-spinal meningitis, and in many cases determine poliomyletis.

The advances made in syphilis have revolutionized the former diagnostic procedures and especially the treatment of syphilis. In infantile syphilis, the treatment by inunctions of mercury has been superceded by neosalvarsan. More recently the use of silver-salvarsan as advocated by Fordyce and others, has given excellent results.

The use of the sinus in transfusion has given feeble infants with low resistance an excellent therapeutic agent. The sinus has been utilized to get blood for Wassermann reactions. Likewise it has been used for the treatment of acidosis and for systemic medication.

The studies in anaphylaxis especially those in asthma by Schloss in this country, and by Pirquet in Vienna, has opened up a new line of thought.

Studies in anesthetics and their association with acidosis due to carbo-hydrate starvation has saved many lives.

We know that the instillation of dextrose or bicarbonate of soda in the colon has prevented acidosis and saved many lives, during the convalescent state and especially immediately after operations.

The scientific advances in the fresh air treatment and open-air living of tuberculosis cases has shown such excellent results, that the profession has cast aside nauseatnig drugs; such as, creosote and expectorants and relied upon fresh air to aid nutrition, to stimulate metabolism, and to encourage blood-building by nutrition and thorough oxygenation of the lungs.

The study of heart diseases have been greatly advanced. It is not always necessary to put a child to bed, and worry over it. Exercises for the development of a weakened circulation and light gymnastics under the supervision of one skilled in taking blood pressure, supervising the pulse and noting circulatory disturbances resulting from over-straining. Such gymnastics and athletics, should be prescribed just as we would order a definite dose of medicine and note its effect.

Great advances have been made in the study of the endocrine glands. The brilliant therapeutic results seen in cretinism and likewise the study of adrenals.

The study of the pituitary glands which influence the growth of the body have taught the profession the value of the endocrene substances, which are almost specific in their action. In intestinal obstruction a hypodermic injection of pituitrin will stimulate intestinal peristalsis, and show the presence or absence of obstruction. It is also valuable as an intestinal stimulant.

The study of allergy has given us new lines of thought, and explained many reasons for sudden deaths and skin reactions, following the intake of various vegetable and animal proteins.

The name of O'Dwyer must always be linked with intense studies and research connected with laryngeal stenosis. He devised the intubation tube and thereby built a monument of fame. Thousands of children in all parts of the globe have been saved by this simple mechanical relief in diphtheria.

The cure of deafness by the currettage of the rhinopharynx and the removal of adenoids is another advance, which has come to stay.

The study of the tonsils and their association as a portal of entry of pathogenic bacteria has shown the profession that rheumatism begins with tonsillitis.

Many cases of obscure heart disease, owes its inception to an overlooked or neglected case of tonsillitis.

The mastoid operation and intense study of the bacteria causing middle ear infections has opened up many dark paths.

The sinus has been made accessible by modern asepsis for surgical treatment. The diagnostic importance of the X-ray and its therapeutic value in many lesions is the subject of intense study.

The treatment of chronic tonsillitis and diseased glands and the value of the X-ray in luekemia is being more and more recognized.

Literature in recent years, reports sensational articles dealing with the value of the X-ray in curing diseased tonsils instead of by the present day surgical operation. This subject is still in its embryonic state.

The prevention of blindness by the use of silver nitrate solution in each eye, to destroy purulent micro-organisms, if present, at the birth of the baby is one of the greatest steps in the prevention of disease which the profession now use at every birth.

In former times any acute contagious disease was followed by fumigation of the room or rooms occupied by the patient. Intense bacteriological study has proven the fallacy of fumigation in as much as all bacteria are destroyed by the influence of fresh air and sunlight.

33 West 73rd Street.

Diagnosis of Syphilitic Aortic Regurgitation

E. T. Stolkind says that for the differential diagnosis of endocardial and arterial aortic insufficiency, the following symptoms are of most importance:

1. In syphilitic regurgitation the face is often pale; in endocardial the face is often red.

2. In cases of endocardial insufficiency more than 50 per cent. of the patients are not older than 25-30, while in cases of syphilitic arterial regurgitation the great majority are over 35 years.

3. As regards the average duration of endocardial and arterial regurgitation, it is in all probability longer in the case of the former.

4. For differential diagnosis the anamnesis may often be of use. In endocardial aortic regurgitation the patients generally give a history of rheumatic fever (articular rheumatism) chorea, scarlatina and other infectious diseases, while in arterial insufficiency syphilitic disease may be discovered.

5. A very important sign for the differential diagnosis is the appearance of aortic stenosis, a complication often observed in endocardial aortic insufficiency, and only in exceptional cases in syphilitics.—(*Medical Press*, London, August 10, 1921.)

A HALF CENTURY IN UROLOGY

HENRY H. MORTON, M.D., F.A.C.S.,

CLINICAL PROFESSOR OF GENITO-URINARY DISEASES IN THE LONG ISLAND COLLEGE HOSPITAL; GENITO-URINARY SURGEON TO LONG ISLAND COLLEGE AND KINGS COUNTY HOSPITALS AND THE POLHEMUS MEMORIAL CLINIC, ETC.

Brooklyn, N Y.

Half a century ago the development of that branch of surgery which we know today as urology was like the description in the Bible of the world before creation—without form and void. With the exception of St. Peter's Hospital in London and Guyon's ward in the Necker Hospital in Paris, genito-urinary wards did not exist in the general hospitals, and such service as there was comprised patients with skin diseases, syphilis, acute gonorrhea and suppurating buboes, with an occasional stricture case and now and then a hydrocele or tumor of the testicle, while stone in the bladder, which was practically the only major operation in the entire field of urology, was treated in other departments of the hospital by the general surgeon.

Today urology is a clean-cut, definite and exact department of surgery, and to practice it requires as long and arduous an apprenticeship in operative technique and the use of instruments of precision as any of the other specialties.

In what way has this change been brought about? How has the former chaotic and ill-defined mass of material been placed in a well-ordered system by itself so that there is no overlapping into adjacent fields?

Human progress advances by steps: when one step is reached we move to the next one higher up.

The three great foundation stones upon which urology of today is built are:

First. The invention of the cystoscope.

Second. Kidney diagnosis by the x-ray and functional tests.

Third. The development of prostatic surgery.

The invention of the urethroscope by Desormeaux stimulated interest in viewing the urethral canal, and it was but a step farther to attempt the visual exploration of the interior of the bladder. Cruise, of Dublin, in 1865, devised a hollow tube with a glass window and mirror and a system of illumination which permitted an imperfect view of the interior of the bladder. But in 1876 Nitze announced the principle that "in order to light a room you must bring the lamp in with you." He supplied illumination by means of an incandescent platinum light provided with a circulation of water around it to avoid burning the mucosa of the bladder, and a system of four lenses, combined with a prism, which permitted an excellent view of the bladder. The instrument maker of Vienna, Leiter, assisted him, and on March 9th, 1879, the instrument was presented before the Medical Society of Vienna. The difficulties of illumination, however, prevented its very general adoption and use, and it was not until 1887 that the discovery of the Edison lamp made the instrument a practical one, and the final cystoscope, such as we know today, was constructed. Other workers, following the example of Nitze, were using systems of lenses with lighting, such as the instrument devised by Brenner and used successfully by Tilden Brown, of New York. Not only was it possible to view the interior of the bladder and locate stones and enlargements of the prostate and view the ureters, but attempts were made to catheterize the ureters and separate the urines. It was not until 1897, however, that Albarran suggested the little trigger-like deflector for bending the catheter and so converting its shape so that it could easily be made to enter the ureter, that the separate urines could be readily obtained and studied. Attempts were successfully made to catheterize the ureters through a hollow tube with the patient in the knee-chest position, and the names of Howard Kelly of Baltimore, and Pawlik, of Prague, who used their instruments respectively in 1893 and 1898, will be remembered as exponents of this method.

The discovery of the cystoscope and the ability to deflect and direct instruments within the bladder, naturally led to the various intravesical operations, such as slitting of the ureters and fulguration of bladder tumors. But without a knowledge of the functional capacity of the right and left kidneys, merely viewing the bladder would be of but little aid in clearing up the formerly obscure conditions of the kidneys.

With the advent of the röntgen ray, which was first applied to urological conditions in 1896 by MacIntyre, the diagnosis of renal calculus and the determination of the size and position of the kidneys became matters of ease and today the radiogram is as necessary in the study of a kidney case as a temperature chart in a case of typhoid fever.

As an aid to the visual inspection of the size and position of the kidneys by the radiogram, pyelography has also a very definite and useful place in the examination of a patient with renal disease.

The first attempt to render the urinary tract opaque with the *x*-ray was made by Tuffier in 1897. He suggested the combination of an opaque ureteral catheter and radiography. Schmitt and Kolischer, in 1901, independently suggested the same method and published radiograms which showed the course of the ureter and the situation of the renal pelvis by a fused wire inserted into the ureteral catheter. In 1905 Fenwick devised a ureteral bougie with walls impregnated with metal. In 1906 Voelcker and Von Lichtenberg filled the bladder of a patient with a solution of colloidal silver. The solution entered the ureter, flower back and filled the renal pelvis. This suggested to them the idea of filling the pelvis of the kidney with an opaque solution through a ureteral catheter, and the same principal is used today, but with a modification of their original solution.

But mere knowledge of the form and position of the kidney would be of but little practical value in operative cases, and in the last analysis it is the functional tests which give us the necessary information as to prognosis, upon which we depend in operating, for by means of the functional tests we are able to determine the relative activities of the right and left kidneys and also the possibility of both kidneys working together to support life after a severe operation, such as prostatectomy. Without knowledge of these facts, kidney and prostatic surgery would carry a heavy mortality, whereas a careful study of the kidney function places us in position to take the necessary steps to improve a diminished kidney function, in cases of bilateral insufficiency, or enables us to distinguish between the sound and the diseased kidney in cases of unilateral disease.

The history of kidney functional tests really dates from the year 1897 when Guyon and Albarran first used methylene-blue combined with catheterization of the ureters.

Cryoscopy, as employed by Korany in 1893, and which consisted in comparing the freezing point of the blood with the freezing point of the urine, was a complicated and imperfect method of determining the eliminative power of the kidneys. It was more helpful as a means of distinguishing between the function of the right and left kidney.

In 1896 Klemperer called attention to the fact that the administration of phloridzin would cause a temporary glycosuria, and in 1901 Casper and Richter employed this means to differentiate between a sound and a diseased kidney in the same patient. A simple and practical test which supplanted all the previous tests was brought out by Voelcker and Joseph in 1903. The found that the solution of indigo-carmin injected into the blood would appear from each kidney, if normal, simultaneously within eight minutes following its injection. If one kidney was diseased, the execretion of indigo-carmin on the diseased side would be delayed. By catheterizing the ureters and observing the color of the urine as it dropped from the catheter one would be able to determine if the kidney were normal or diseased. It was also of use in cases in which the ureters could not be catheterized, for by watching the ureter a blue spurt could be seen issuing from the sound kidney in eight minutes or less, whereas a delay in the excretion of the dye indicated that the kidney on the delayed side was diseased.

The determination of the relative excretion of urea from both kidneys had been made use of for a long time, but was particularly emphasized by Rovsing, and the introduction of phenolsulphonephthalein into urological practice by Geraghty and Rowntree, in 1910 and 1912, placed at our disposal a method which was easy to apply and very exact in its results and one which could be used for the purpose of determining the action of both kidneys together, or by means of chromocystoscopy utilized in the same manner as indigo-carmin, an accurate idea could be had of the functional capacity of each kidney separately.

At the present time phenolsulphonephthalein gives us the necessary information which is required, and as a check upon the kidney excretion the aid of blood chemistry, in which the amount of nitrogenous material retained in the blood is accurately computed, and if it is in excess shows an insufficiency of the kidney, is also an important addition ot our diagnostic aids.

The study of functional kidney tests naturally leads to a consideration of the operations upon the kidney.

Although the practicability of nephrectomy had been discussed by surgeons from the time of the sixteenth century and nephrectomy had been performed experimentally on animals and notwithstanding the fact that its performance had been attended by success, surgeons feared that one kidney was incapable of supporting life, and hence the operation was never done.

In the early days of surgery the dictum of the leaders of the profession was looked upon as final and conclusive, and it was a brave man indeed who had the courage of his convictions to stand up and face such a statement as made by Rayer that it was madness to dream of extirpating a kidney in the human subject. In spite of this opinion, which was a general one, the birth of kidney surgery may be said to date from the year 1869, when Gustave Simon, of Heidelberg after a number of experimental nephrectomies in animals, removed, by the lumbar method, the kidney of a woman who had a ureteral fistula, opening upon the abdominal wall above the pubes, resulting from an ovariotomy which had been done a year and a half previously. The woman was cured, and a year later, Gilmore, in America, followed with a second nephrectomy, which was also attended with success.

Nephrotomy, for removing stones, had been discussed and Sir Thomas Smith and Sir Spencer Wells, in 1869, advocated its use.

In 1870 Bryant, of New York, performed a nephrotomy for tuberculous pyonephrosis, but at too late a stage to save the patient.

In the succeeding ten years nephrotomy was done occasionally for exploration or for evacuating abscesses. In 1880, however, Henry Morris removed a large mulberry calculus from the kidney of a young woman, the kidney being exposed through an oblique incision in the loin. This case demonstrated that a stone could be removed by cutting freely through the thick layer of kidney tissue.

After Simon demonstrated that the kidney could be removed with safety, Martin, of Berlin, in 1871, recommended and practiced the operation of nephrectomy for movable kidney, but in 1881, Hahn, of Berlin, described cases where he had secured fixation of the kidney by making a lumbar incision and suturing the kidney capsule into the wound.

In no class of surgical cases is the reduction of mortality, due to improved operative and diagnostic technique, more striking than in operations on the kidney. The statistics as presented by Küster are most instructive. In the years 1861 to 1869 nephrectomy was done on five patients with a mortality of 80 per cent. In 1882 Harris reported 50 cases with a mortality of 38 per cent, while in 1902 the collected reports of Küster on 1067 cases on lumbar nephrectomy showed a reduction in the death rate to 12.8 per cent.

From the earliest times when history began to be written, one of the great disabilities of old age in men was the obstruction to urination because of hypertrophy of the prostate. In the museum of Pompeii is a number of catheters which were used by the surgeons of that ill-fated city, and one of them has the identical curve which we use today in cases of hypertrophied prostate. In the description of old age in the Bible the interference with making water is indicated in poetic terms by the expression "When the golden bowl is broken at the well and the pitcher is broken at the fountain" and an old man afflicted in such a way, until very recent years, had no other recourse but to live a catheter life.

The operation of prostatectomy was not evolved in a day, but was a thing of slow development, each writer on the subject adding something to the sum total of our knowledge.

The earliest attempt at operative interference on the prostate consisted of a simple incision, or prostatotomy, through the perineum, in which the middle lobe was divided in halves and a V-shaped piece cut from the prostate in order to get a low leveled channel from the bladder. It was found that when the prostate was not more than three inches thick it was possible to reach a projecting median lobe through the perineum. Once within reach, the lobe could be

readily divided with a knife, or if it was nipple-shaped, it could be nipped with scissors or an ecraseur.

It was found, however, to be rarely possible, by means of a simple prostatotomy, to remove enough of the overgrowth of prostatic tissue to relieve the symptoms of obstruction, and the chief advantage which followed was the benefit which the patient obtained through prolonged drainage of the bladder through a catheter and the consequent improvement of the cystitis.

In 1888 a great impetus was given to prostatic surgery by two operations of McGill, of Leeds, England, who removed portions of the prostate through a suprapubic incision. These growths were chiefly intravesical projections, which were removed by cutting them with a scissors and tearing off the growths with forceps, the suprapubic wound being subsquntly utilized for the purpose of bladder drainage.

In 1890 Belfield, of Chicago, advanced the technique of prostatectomy by operating through a combination of suprapubic and perineal incisions. In this way easier access was afforded to the prostate and the growths were removed by enucleation instead of cutting and tearing them off. In these operations the prostate was enucleated through the suprapubic wound, and the perineal wound was used as a means of drainage.

Hemorrhage was always considerable and often alarming, and the bleeding had to be controlled by packing not only the cavity in the prostatic capsule, but the bladder as well.

The mortality of suprapubic prostatectomy remained at a very high rate, reaching, in the cases reported, 20 per cent.; but if all the fatalities were known, the death rate would probably be much higher.

In 1895 Eugene Fulle, of New York, published an account of improved technique for suprapubic prostatectomy with a report of six cases which had been subjected to operation, and in 1900 Freyer, of London, described practically the same operation, but took to himself all credit for originating it, although the details of Fuller's method had been described to him previously by Dr. Ramon Guiteras, of New York.

With the knowledge which has been acquired through the medium of the kidney functional tests and an accurate understanding of the preliminary treatment in cases about to undergo the operation of prostatectomy, the mortality accompanying it has now been reduced to the point where it may be considered an operation with comparatively little danger to life.

Methods of improving the kidney function and keeping the bladder empty, thereby eliminating the danger of sudden reduction of the back pressure from too rapid withdrawal of the supporting fluid, have eliminated the danger of suppression of urine, from which most of these patients died following prostatectomy.

One word might be said as to the method of the two-step operation. By draining the bladder as a preliminary through a suprapubic incision and enucleating the prostate at a subsequent operation when the conditions permit of it, some of the desperate cases are saved which otherwise could not stand the strain of a complete prostatecomy.

Perineal operations have been worked out in the same way by different surgeons step by step.

The first surgeon to describe the technique of enucleation of the prostate by the finger through a perineal incision was J. W. S. Gouley, of New York, in 1873, but to Bryson, of St. Louis, in 1898, and Alexander of New York should be given the credit of applying a technique of the perineal operation for the relief of a large number of prostatic hypertrophy with a low rate of mortality.

The dissecting operation, by which the prostate is exposed through a transverse incision and enucleated under the guidance of the eye, developed on the Continent of Europe, more particularly at the hands of Albarran (first publication in 1901), and was further greatly facilitated by the application of a tractor for drawing the prostate down into the wound by Hugh Young, of Baltimore, in 1903. To this brilliant urologist (Hugh Young) belongs the credit of being the surgeon who has done more than any other man in America to make the operation of perineal prostatectomy safe and practical. While the operation of prostatectomy was being perfected, its early difficulties and its high rate of mortality in the beginning led surgeons to seek for other means of reducing the obstructing prostate. Castration, or removal of the testicles, was practiced for a short time and then abandoned.

Bottini's operation consisted in burning a channel through the hypertrophied prostate, and the electric cautery was used with but slight success; and as the technique of the suprapubic and perineal operations became perfected the Bottini operation was deservedly forgotten.

One of the earliest urological operations described in medical history was that of removing stones from the bladder, and great advances have been made since the time when itinerant lithotomists wandered about the country from one town to another cutting for stones. That they possessed a high degree of skill can be understood when we come to read the ancient form of Hippocratic oath as taken by his students, in which they promiserd not to cut for stone, but to leave the operation exclusively to those who made a practice of it.

Until half a century ago practically all stones were removed by the operation of perineal lithotomy, and surgeons took great pride in doing the operation and relating their cases, and one who had the reputation of being a good lithotomist was one of the very upper strata of the surgical profession.

Civiale, who was strongly inclined towards matters urological, from 1822 to 1867 revolutionized the treatment of stone by inventing and using an instrument to crush the stone within the bladder. His practice was to crush, without an anesthetic, as much of the stone as possible into the form of a fine powder or small fragments, which were passed spontaneously. The larger pieces remained within the bladder and were crushed at subsequent sitting. The disadvantages of this procedure was the intense cystitis which was set up by the foreign bodies which remained within the bladder and the fact that it was impossible to tell if all the loose fragments had been removed because if they were not, they remained behind to form a nucleus for subsequent stone formation; hence the advice of Sir Henry Thompson, to his stone patients to spend several shillings in omnibus fare after a litholapaxy, and if they could ride comfortably in the jolting omnibus, they need have no fear that a fragment had been left behind.

In 1864 Clover realized the importance of getting rid of the entire stone at one crushing, thus avoiding

the pain of passing the fragments, the increase of the cystitis and the danger of pyelitis and urosepis. He devised an evacuator and began crushing and evacuating the entire stone at one sitting. His plan was not generally adopted, however, until Bigelow, of Boston, in 1878, devised his lithotrite and evacuator. This instrument was so perfect at the time it left his hands that although nearly every urologist has tried to improve upon it, we still adhere to the original model of Bigelow.

In Englind Sir Henry Thompson accepted and used Bigelow's instrument and method and through his reputation and advocacy caused its general adoption in Europe.

The statistics of that time are interesting to note as compared with our present results. Sir Henry Thompson reported a series of 110 lithotomies with 35 per cent. of deaths, and 672 litholapaxies with 6½ per cent. of deaths; but the treatment of large stones was a difficult and dangerous problem because they were too large to crush, and if removed by perineal lithotomy, laceration of the tissues as they were drawn out through the wound caused traumatism and a high mortality because of the resulting infection. A simple solution of the problem was at hand. Although suprapubic lithotomy had been known from the sixteenth century, when it was first used by Pierre Franco, it had never been popular until Peterson, of Kiel, in 1880, found that by filling the bladder with water it could be safely entered above the pubes by an incision without wounding the peritoneum. His habit was to close the wound except for an area at the lower angle which was occupied by a tube used to drain the urine from the bladder.

Dittel, of Vienna, further modified Peterson's operation by air distention and the introduction of the rectal bag.

Today the operation of lateral perineal lithotomy, which was the pride and the joy of the older surgeons, is obsolete.

The operation of lithoplapaxy is still one of choice for stones that can be crushed, and suprapubic systotomy, which was first thought of in the sixteenth century by Pierre Franco, is now the accepted method of attack for large stones.

One word as to diagnosis. For the purpose of finding stones the older surgeons made use of the searcher and became very expert in its use, being able to detect the number and size and even the consistency of stones in the bladder, whereas today we who are able to see stones in the bladder by means of the cystoscope rely upon that more definite instrument for diagnosis.

One more condition may be spoken of before leaving this interesting retrospect into the methods of an earlier day. Strictures of the urethra no doubt existed from the time when man first began to be infected with gonorrhea, and many a character in history is known to have suffered the tortures of retention of urine and ascending pyelitis and such complications as a result of the inability of surgeons to treat them intelligently.

Strictures became less frequent as more sensible methods of treatmat for gonorrha came into general use and the abortive treatment with strong injections of nitrate of silver was abandoned.

The diagnosis of stricture was made in ancient times in a crude way, by passing bougies, by which instruments only massive infiltrations could be determined.

In 1807 Benjamin Bell invented and used probes with a ball at the end, and in 1845 Leroy D'Etoilles made gum elastic bougies with an acorn shaped ball at the end, an instrument which for the determination of stricture none better exists today.

Visual inspection of the urethra and the discovery of strictures by means of the endoscope became a practical thing twenty years ago after the introduction of Oberlaender's urethroscope.

Previous to the year 1844 it was the ordinary practice for surgeons to use caustics and escharotics carried on the point of a sound to the face of the stricture and held there with the idea of burning away carnosities. If an instrument failed to pass through a stricture into the bladder, the stricture was declared impermeable and there was nothing left but to do a suprapubic puncture. At this time Syme revived the forgotten operation of introducing a grooved staff into the bladder and cutting through the stricture by means of a perineal section. The chief value of his teaching was that he announcd the basic principle that all the fibers of connective tissue must be cut through in order to successfully operate on a stricture. His operation through the perineum was adapted for the deeper strictures, but he could not reach anterior strictures through his incision. At this time the French surgeons were in the habit of using flexible bougies and making small incisions, or scarifications, through the superficial tissues; but in 1852 Reybard constructed a strong urethrotome which cut deeply into the tissues; and his reason for doing so was a reiteration of the principle of Syme. His cuts, however, were too deep, he lost patients from hemorrhage and his operation was abandoned.

In 1855 Civiale devised his urethrotome which cut from behind forward and deeper than was the prevailing practice. At the same time he did not divide all the fibers as Reybard and Syme had proved was necessary. Civiale also applied the use of a slender filiform gum bougie conductor to his urethrotome, and this instrument is still the favorite urethrotome in France today.

The imperfect technique of urethrotomy at that time led surgeons to employ the method of divulsion, or forcibly tearing the stricture apart, and in 1863 Holt devised an instrument with two blades for this purpose. This rough and brutal method of tearing the urethra asunder temporarily relieved the stricture but as it always re-contracted it left the patient's urethra in a worse state than before on account of the additional cicatricial tissue which was thrown out to heal the laceration.

In 1865 Gouley, of New York, substituted his whalebone guides for the gum elastic conductors formerly in use, and in 1868 applied his whalebone guides and tunneled sounds to the operations on stricture through the perineum.

The experiments of Bigelow in introducing lithotomy instruments demonstrated the large calibre to which the urethra could be distended, and acting upon that idea, Otis, of New York, in 1870, calibrated the urethra and devised an instrument after Reybard's plan which would cut all the fibers of the stricture. He also revived meatotomy, which was first done by Civiale in 1824.

At the time of which we are writing it was well understood that strictures in the first five inches of the canal demanded an internal urethrotomy, whereas those situated back of the peno-scrotal junction

could be handled better by means of external urethrotomy.

The improvements of draining the bladder by a tube inserted through the perineal wound and controlling hemorrhage by a pack placed around it and uniting the cut edges of the urethera by sutures of the urethra, are so obvious that they came spontaneously.

During the first half of the nineteenth century the non-operative treatment of strictures consisted of dilation with wax bougies or steel sounds, and in obstinate cases where no operation was done, continuous dilation or the tying in of an instrument for several hours, then removing it, and tying in a larger instrument were the methods in vogue.

In 1870, Oberlaender, of Dresden, after looking at an Otis urethrotome, devised a plan of gradual dilation of strictures by means of a two-bladed instrument resembling the urethrotome. Forcible d' vulsion was not intended, but he found that by gradual stretching at weekly intervals, fibrous strictures could be converted into a dead scar which had but little tendency to re-contract. The two-bladed instrument gave way to an improvement by Kollmann made of four blades, which brought pressure to bear on four points and was less liable to cause a laceration of the urethra, and this instrument is the one which is in daily use by every urologist at the present time.

When we who are working with modern instruments and methods find time to remember the difficulties which the founders and fathers of our branch of surgery had to contend with, it should be a source of encouragement to us, and it is very interesting to look back sometimes and study the gradual perfection of our specialty from its earliest beginning until the present day; still how more interesting would it be if we could come back after a hundred years and see how the surgeons of that time handle the problems which are discouraging us today

BIBLIOGRAPHY:

Erichsen's Surgery, 1878.
Lectures on Disease of Urinary Organs. Sir Henry Thompson, 1874.
Lectures on Disease of Urinary Organs. Sir Henry Thompson, 1888.
Stricture of the Urethera. Sir Henry Thompson, 1869.
Lectures on Some Important Points Connected With Surgery of Urinary Organs. Sir Henry Thompson, 1884.
Stricture of the Male Urethra. Otis, 1889.
Surgery of the Genito Urinary Organs. Gouley, 1907.
Renal Surgery. Morris, 1898.
Pyelography. Braasch, 1915.
Genito Urinary Diseases and Syphilis. Morton, 1918.

32 Schermerhorn St.

Ocular Manifestations of Syphilis

Coutela, of Paris, classifies these:

Hereditary syphilis: (1) Early hereditary syphilis. Iritis is rare in the infant and differs in no essential feature from that in adults. More frequently met with at birth are posterior synaechia (irregular pupils). Malformations of the ocular globe may be of syphilitic origin. Among the affections of infanthood there is one that points particularly to syphilis—viz., glaucoma. (2) Late hereditary syphilis. There is practically only one manifestation, but it is of capital importance, viz., interstitial keratitis.

Acquired syphilis: Iritis is the commonest syphilitic ocular manifestation. It is apt to supervene at the fifth or sixth month or much earlier. Syphilis is by far the commonest cause of ocular paralysis—60 per cent. Speaking generally, they are a late symptom; they are grouped among the tertiary symptoms. An aid to the diagnosis of syphilis of nervous system is through examination of the pupils: Inequality of pupils a presumption, not a proof of syphilis; deformity of pupils caused by unequal atrophy; myosis is a presumption of syphilis; Argyle Robertson's sign (loss of pupillary contraction to light, it being retained on convergence) is a symptom of nervous syphilis belonging to the tabetic series, but it alone does not justify the diagnosis of tabes.—(*Medical Press*, London, August 10, 1921.)

THE PROGRESS OF OBSTETRICS AND GYNECOLOGY DURING THE LAST FIFTY YEARS.

HARVEY BURLESON MATTHEWS, B.Sc., M.D., F.A.C.S.,
Brooklyn.

In every domain of medicine great progress has been made during the last fifty years, but perhaps in no department of medicine have these advances been so markd as in obstetrics and gynecology. Indeed, in the words of M. Handfield Jones, "in tracing the developments of modern gynecology, and the same may well be said of obstetrics, it is difficult for the student of our times to estimate the value of each claim to progress, and to set a just price on each alleged advance; for it must be allowed that among many brilliant achievements many false starts have been made, and the boasted triumph of yesterday has been ranked among the failures of today."

In the development of any science or art there must be certain epoch making investigation that form the basis of success, for without success of some degree there will be no progress. It therefore fell to the lot of Sir Joseph Lister to give to the surgical world in 1867 his "Principle of Antisepsis in Surgery" which revolutionized the science and art of surgery, including obstetrics and gynecology. Infection had heretofore been the plague of the obstetrician and gynecologist and therefore their success had been held in abeyance but thenceforth infection was to be minimized and the science and art of obstetrics and gynecology developed to the highest state of perfection.

Puerperal Sepsis.

Oliver Wendell Holmes in 1845 and Semmelweis in 1847 gave the world the first true information on puerperal sepsis. They believed that puerperal fever was due to wound infection at the time of labor; that such infection was contagious, and that by cleanlines childbed fever could be prevented. In 1867 Sir Joseph Lister published his epoch making monograph, "On the Antiseptic Principal in Surgery," which was destined to exert far reaching influences on the practice of obstetrics, and Stadtfeld of Copenhagen in 1870, applying the Lister principles of antisepsis to obstetrics wrote extensively upon the introduction of aseptic methods in the practice of midwifery. The idea became so universally prevalent that the period between 1870 to 1888 is called the "Antiseptic Era" in obstetrics. The work of Pasteur, Koch, Tarnier, Goodeel, Engleman of St. Louis, Clark, Barker and Lusk of New York and others, in all parts of the world, put the antiseptic handling of the obsetetric case "on the map." The midwife was no longer the choice of intelligent people, particularly in America.

Aseptic precautions which limited puerferal infection, as outlined by Engleman of St. Louis in 1888, shows that in the New York maternity, in 529 cases (1882-1883), a mortality of six per cent was present. After the reform inaugurated by Richardson of Boston and Garrigues of Brooklyn (antiseptic midwifery) the mortality of the lying-in period for all cases was 0.21 per cent in 483 cases, from 1885 to 1886. At the same time in Vienna, where the larger clinics were utilized for teaching purposes, we find a mortality of 0.4 per cent and in the Charité in Berlin in 1885 there was a material mortality of 0.35% in 1368 labors. Certainly such statistics show progress.

Today, largely through the influence exerted by the work of this period and later through the efforts of such workers as Schottmuller, Bondy, Veit, Fromme,

Kronig, Doederlein, W. T. Lusk, Charles Jewett, Green, Tuttle J. W. Williams, H. M. Little, B. C. Hirst, J. O. Polak, De Lee, and many others too numerous to mention, we know, beyond any doubt, that puerperal sepsis is a wound infection and is, therefore, in the vast majority of cases, absolutely preventable. Notwithstanding, the mortality rate of this terrible malady is still far too high as shown by the fact that in 1920 more than 15,000 women in the United States lost their lives as a result of infection during childbirth.

The Beginning of American Obstetrics and Gynecology.

In America modern obstetrics and gynecology had its true beginning in New York City on September 13, 1876, when the American Gynecological Society met for the first time. Fordyce Barker occupied the president's chair. It was before this meeting that Robert Battey read his memorable paper on "Extirpation of the Functionally Active Ovaries for the Remedy of Otherwise Incurable Diseases" in which he advocated the removal of one or both ovaries for various morbid conditions, e.g. hysteris, menorrhagis, amenorrhea accompanied by excessive menstrual molemina, ovarian neuraliga, severe dysmenorrhea, etc. Indeed, ovariotomy was, in the early seventies, perhaps the most talked about of all operations. E. R. Peasly of New York in 1872 published his "Ovarian Tumors" and T. G. Thomas in 1870 had performed the first vaginal ovariotomy. Hegar had recommended ovariotomy for the cure of fibromyom uteri; and Lawson Tait had recommended the removal of tubes and ovaries when the seat of inflammatory disease; and hence it was quite natural that ovariotomy should be considered at the initial meeting of the American Gynecological Society.

The operation for closure of vesico-vaginal fistula, a very common and deplorable ailment in the early days of obstetrics, had, by this time, been put on a truly surgical basis, largely through the work of J. Marion Sims and T. A. Emmet in this country and Gustav Simon in Germany. Nathan Bozeman, in 1887, published his work on vesico-vaginal fistula and the treatment of pyelitis by irrigation of the kidney through a catheter passed into the ureters through a vesico-vaginal opening.

T. Addis Emmet, a pupil of J. Marion Sims, was destined to be the master plastic pelvic surgeon, and by 1882 had developed such perfect and satisfactory operations upon the cervix and pelvic floor that even today they remain but little altered. Any operation upon these parts since the days of Emmet are little more than improvements upon his original ideas, made possible only by a more thorough knowledge of the pathology of the structures involved and a better developed operative technic.

Fibroid Tumors

The history of the progress in the operative treatment of fibroid tumors of the uterus is very interesting and particularly as the American gyncologist has had a very great deal to do with the present perfected technic. In 1884 T. A. Emmet in his "Principals and Practice of Gynecology" outlined the operative technic of this period. He advised shutting off the cervical stump from the peritoneal cavity by covering it with the bladder reflexion of peritoneum. Hegar, Keith, Lawson Tait and others were still ligating the cervical stumps *en masse* and bringing it out of the lower angle of the abdominal wound to control sepsis. Joseph Eastman, Florian Krug and Polk of New York were trying to get rid of the cervical stump by doing pan-hysterectory. In 1889 Stimson of New York in his "Some Modifications of Technic of Adbominal Surgery" proposed doing away with mass ligature and recommended individual ligation of the main blood vessels. In 1892 Baer of Philadelphia recommended Stimson's technic with the additional improvement of covering over the cervical stumps with peritoneum, leaving the entire mass extra peritoneal.

Ectopic Pregnancy.

No mention could well be made of ectopic pregnancy without adding thereto the names of John Parry and Lawson Tait. In 1876 Parry published his treatise on "Ectopic Gestation" and in 1883 Tait performed his first operation for ruptured tubal pregnancy, which gave him the impetus to investigate, write about and popularize the method. It is largely due to the teachings of Tait that the pathology of tubal pregnancy, as we have it today, has been developed. Chronic pelvic inflammations, especially gonorrheal, still remains the main etiological factor in the causation of ectopic pregnancy. (Duhrssen, Litzenberg, Robinowitz, Williams, R. R. Smith, J. W. Williams, Polak.) The time for operation in the unruptured or non-tragic variety is immediate but for the ruptured or tragic variety there is still some difference of opinion. It is generally conceded, however, that unless the patient be *in extremis* the old surgical maxim of "when there is a bleeding vessel, tie it" should be practiced.

Uterine and Cervical Cancer.

There is no subject in medicine, and particularly in obstetrics and gynecology, that has been given or that needs today any more conscientious study and scientific investigation than the subject of cancer, particularly uterine and cervical cancer. In 1895 John G. Clark and Emil Reis wrote independently about removal of the uterus, cervix and adjoining tissues including the upper portion of the vagina. In the same year Rumpf in Germany recommended extirpation of the lymph glands along with the cancerous uterus, the first operator on the continent to extend the Clark-Reis operation. In 1900 Wertheim (Germany) described his extensive radical operation for cancer of the uterus, including the pelvic glands, and his conclusions are based upon the results of 500 cases of uterine cancer upon which he operated. This method was practically identical with that recommended by Clark and Reis. Byrne of Brooklyn through an extensive experience with the cautery, obtained some astonishingly good results. All the latter cauterizing procedures for uterine and cervical cancer have been modeled after the Byrne operation.

As regards the microscopic study of cancer, reference must be made to the work of Runge and Veit, who investigated the true nature of erosions of the cervix and showed how these differed from early manifestations of true cancer. Many other investigators, notably Matthews Duncan, T. S. Cullen, L. Barth, Gaylord, Offergeld, Sampson, Ott, James Ewing, McCollun, etc., all have studied the microscopic pathology of uterine and cervical cancer with a full determination to discover if possible, not only

the cause but the cure of this terrible disease. So far, we know very little regarding the cause of cancer and less about its cure.

Anesthesia.

Anesthesia in obstetrics had its birth in 1847 when Sir James Y. Simpson confined the first woman under an anesthetic. Since this time, anesthesia has been employed universally in surgery and gynecology but rather sporadically in obstetrics, for the reason that there were many clergymen, laymen and indeed even physicians, who believed them and do now, that a woman in childbirth should not have anesthesia for the relief of her pain. In 1878 Pinard wrote an elaborate monograph on "The Comparative Action of Chloroform, Chloral, Opium and Morphine on Women in Labor" and many of his deductions still remain unquestioned. Klinkowitch of Petrograd in 1880 demonstrated the efficacy of nitrous oxide gas and oxygen for the mitigation of pain incident to labor. Webster of Chicago in 1905 employed nitrous oxide and oxygen to obtain surgical narcosis in certain abnormal obstetric cases, notably cæsarian section. In 1902 Schneiderlim began to employ morphin-scopolmin for anesthesia in obstetrics. In 1906 Kronig and Gaus reported their first series of 500 cases under morphin scopolmin analgesia and from that time this method has been the subject of much discussion and investigation in all parts of the world, particularly in America, up to 1917. However, within the past few years "Twilight Sleep," as recommended by Kronig and Gaus, has not not been as popular as was first anticipated, although sufficient morphin to complete the first stage of labor is pretty generally used by most obstetricians of today.

Cesarian Section.

The subjects of the Porro cesarian section, the classical cesarian section as developed by Sanger, the evolution and use of the obstetrical forceps and the toxemias of pregnancy, including eclampsia, deserve full elucidation but for lack of space must be only mentioned as contributing very materially to our present day scientific obstetrics. In 1876 Parro, an Italian, described and practiced the operation of removal of the pregnant uterus with fibroid and later this operation was recommended, particularly by Sanger for these cases that were infected or suspected of being infected in which cesarian section was the chosen method of delivery. In 1882 Sanger described the classical cesarian section almost as it is practiced today. With perfected surgical technic and in properly selected cases, the operation of cesarian section has come to be looked upon as one of the safest operations in modern obstetrics.

Eclampsia.

Eclampsia has been recognized since 1609, but it was not until Bright in 1835 promulgated his ideas of kidney affections that the cause of eclampsia was recognized. Spigelberg in 1870 wrote extensively on the etiology of eclampsia but missed the mark as to its etiology. Deloré and Rodet of Lyons in 1884 put forth another theory as to its cause, but it remained for Rivierè in 1888 to suggest that eclampsia was one of an auto-intoxications which was in turn the result of a piling up of poisons emanating from the pregnant state. The work of Stroganoff, Veit, Sellheim,, J. W. Williams, Slemmons, Stone, Wilson and others too numerous to mention have elaborated the investigations of the early workers and today, we know that prevention by observation of the pregnant woman is the only way to successfully cope with this mischievous malady.

Progress of Obstetrics and Gynecology in Last Decade

The progress of obstetrics and gynecology during the last decade has been largely clinical and while there have been sporadic efforts from the laboratory, the great mass of literature that has been published is largely devoted to the perfection of old ideas or the inventions of entirely new methods of management.

The Use of Radium in Cancer.

In 1911 Wertheim published his book of over 200 pages upon the extensive operation for uterine and cervical cancer and since then cancer has been the subject of extensive study. Peterson in 1916 reported 124 extensive radical operations for uterine cancer with forty-seven per cent of cures after five years. He makes it clear that the primary mortality from the operation is large and can only be reduced by working out a detailed technic. J. G. Clark in the same year gave a statistical report of fifty eight cases of operable uterine cancer treated with radium. A summary of his claims for radium are: (1) the therapeutic action of radium depends upon a correct technic and an accurate diagnosis, which must be based on a careful physical examination of each patient; (2) the results of radium therapy in inoperable and recurrent cancer surpass those of any other known therapeutic agent, and (3) its prophylactic use increases operability.

Again in 1919 Clark reported 100 cases of inoperable cervical cancer treated by radium, with local healing of the ulcer in fifty two per cent. As experience with the use of radium has increased its indications and its limitations are becoming better understood. In cervical and uterine cancer, however, radium is meeting with much the same fate as did radical operation, viz., uncertainty of prognosis. In some cases the effect is little short of magical, while in others, the disease seems to be actually stimulated by the application of radium. There remains, apparently, a great deal more to be learned regarding radium in the treatment of cervical cancer.

In the myopathic hemorrhages of the uterus the place occupied by radium is established and it may be stated with positiveness, that excessive uterine bleeding can be controlled by one or two applications of fifty mg. of radium for twenty-four hours. Furthermore, clinical observations have proven that the effect of these moderate doses of radium is on the uterine endometrium and does not effect permanently the fallicular elements of the ovary, so that one may feel confident that unless excessive dosage is used there will be a return of menstruation and ovulation will continue. In fibromyomata of the uterus radium, except in certain cases, will certainly control hemorrhage. Kelly and Burnam, J. G. Clark, Keene, Miller, Bailey, and G. G. Ward have used radium in these cases extensively and have proven its value. However, there are certain very definite contraindications to the use of radium in fibroid tumors of the uterus and unless these be recognized embarrassing complications are apt to occur.

Perineotomy.

Perineotomy or median incision of the perineum for the preservation of the levator ani muscles in labor as suggested by Pomeroy is justly growing in popularity. Almost every primiparous, and many multiparous, women are far better off with episio-

tomy which can be surgically stitched immediately, than with a lacerated, contused wound with over-stretched fascial sheaths, which will surely result in some degree of rectocle. Naturally care and deliberation should be exercised lest the introtus and pelvic floor be sutured too tightly.

Transfusion in Gynecology and Obstetrics.

As time goes on the use of blood transfusion in gynecology and obstetrics become more popular and deservedly so, for certainly there are many valid indications for its use in this field.

Williamson, along with Garbot, Polak and others, strongly recommends the citrate method. It is by far the simplest, and therefore the easiest method of transfusion. The percentage of reactions are greater by this method than by the direct transfusion of blood; but as Garbot states, these reactions are for the most part very slight and therefore should cause no anxiety on the part of the surgeon. Gabot, reporting 100 transfusions, had 48 per cent of his cases show no re-action—10 per cent had slight re-action and 42 per cent showed definite re-action consisting of chill, temperature, quickened pulse and often vomiting. After transfusion by the citrate method 50 per cent of our cases at the Long Island College Hospital have shown no reaction.

There is a most important field for transfusion, in the bacteriemias. In a preliminary report Polak has called attention to the very great value of repeated transfusions in the blood stream infections. He recommends 250 to 350 c.c. of citrated blood every third or fourth day. We believe that in a severe bacteriemis with high temperature 300 c.c. of blood will do the patient just as much good, if not more that 60 to 800 c.c. as is very commonly given. Transfusion with immunized blood has been practiced in this class of cases, but no definite conclusions as to the advantages or disadvantages have as yet been arrived at. Theoreticall immunized blood should be far superior to the non-immunized in the blood stream infections; but clinically there is still very grave doubt if such is the case.

Version.

Potter, of Buffalo, has broken all records for the operation of podalic version—having performed version 2,900 times in the past few years. That Dr. Potter has grown proficient in the technic of version, there can be no doubt. He is a master. But whether the operation is justified as a routine method of delivery we question seriously. In fact it may well be called "meddlesome midwifery." It certainly is not a procedure to be done by a general practitioner or the occasional obstetric surgeon. Potter's fatal mortality in his 1920 series of deliveries was 7.6 per cent, about twice what it normally should have been. His meaternal morbidity was not tabulated, but he states that it was no greater than when delivery was accomplished by the normal processes. He had no maternal mortality. To be sure such a record is enviable. On the other hand, how many women will suffer if this procedure is practiced by every physician doing obstetrics? Since Dr. Potter has no definite tabulated morbidity charts, how can we be sure that this operation is without abnormal morbidity? These and many other questions might be asked. But why fret about the validity of such procedure when we have been taught ever since the obstetric text book was first written that intelligent "watchful waiting' should be our guide-post in our obstetric endeavors. Pre-natal care, pelvic mensuration and intelligent observation during the progress of labor with a keen appreciation of the patient's potentialities will usually determine when version is indicated and when it is not.

Human Sterility.

The subject of sterility is still one of great interest but very often extremely difficult to remedy. The latest investigation in this field is that of Reynolds and Macomber (June, 1921) in which they have studied the question of certain dietary factors in the causation of sterility in rats. They found, among other things, that diet had a great deal to do with the fertility of rats—male and female—and that by alteration of the diet sterility could actually be produced in rats. Will such a regime work in the human family? This remains to be seen. Thus far our efforts for the relief of sterility have been directed towards overcoming some anatomical or pathological condition in both the contracting pair, coupled with administration of the endocrines to the female. Operative proceedures of the female are, fortunately, less frequent than formerly. The Rubin test for determining the potency of the fallopian tubes is extremely practical and should still further reduce the incident of laparotomy in cases of sterility.

Basal Metabolism.

Baer of Chicago has made a study of basal metabolism in pregnancy and the puerperium and is the first extensive study of this subject in relation to obstetrics. A summary of his results reveals the fact that the basal metabolic rate in 44 normal cases in late pregnancy averages 33% to 35% above the normal for non-pregnant women of equal surface area; that three days postpartum the average metabolic rate is only 15% above the normal; and that seven to ten days after delivery the metabolic rate is normal. Among Baer's conclusions the following may be put down as the most important: (1) The increase basal metabolic rate in late pregnancy is due to the growing demands of the fetus and placento. (2) The incomplete or delayed return to normal is due to the involution of the uterus and the onset of lactation.

Pre-Natal Care

Few subjects are of greater importance to the physician and indeed to the public in general than the question of pre-natal care. Just as asepsis has saved thousands of mothers, so pre-natal care will protect them from the ravages of the toxemias of pregnancy; will eliminate the useless "painful pounding" in the effort to push a large head through an impossible pelvis; and finally will reduce the fetal mortality rate and thereby reduce the wanton waste of human life that is, even today, appalling. In 1919 there were 280,000 infant death in the United States and this only included those that died during the first thirty days of life. At the Long Island College Hospital, we have shown that by a well organized pre-natal clinic which is linked up directly with the hospital, maternal complications can practically be eliminated and fetal mortality greatly reduced. Beck, in an analysis of 1,000 pre-natal cases, showed a maternal mortality of 0.4% and a fetal mortality of 2.5%. Fortunely through the work of J. W. Williams, B. C. Hirat, Polak, DeLee and many others in this country and in England, the public is beginning to recognize the value of prenatal care.

643 St. Mark's Avenue.

A HALF CENTURY HISTORY OF THE ADVANCE IN DIAGNOSIS AND TREATMENT OF DISEASES OF THE NOSE, THROAT AND EAR

HAROLD HAYS, M.D., F.A.C.S.
ARTHUR PALMER, A.B., M.D.
New York

Progress in the departments of Otology, Rhinology and Laryngology, during the past fifty years, has gone hand in hand with progress in the other branches of medicine. In 1871, Cohn by demonstrating the existence of bacterial spores and their high resistance to heat and other deleterious influences, placed the science of bacteriology on a firm basis and the medical profession began to realize the importance of the presence of bacteria in disease. More than any other one thing, advance in bacteriology has spelt progress in the diagnosis and cure of diseases of the ear, nose and throat.

Especially has surgical treatment improved as we have come to understand the principles of asepsis. Operative procedures have been revolutionized and the percentage of favorable results have greatly increased. Rarely to-day does a patient die from a disease of the upper respiratory tract. Moreover, his period of convalescence, following operation, is much lessened and complications are less frequent.

Our diagnoses to-day are much more exact than in the pre-laboratory days when the existence of the Klebs-Loeffler bacillus, the Treponema pallidum and spirilla of Vincent's angina, not to mention numerous other organisms, were as yet undiscovered. Likewise has the treatment of the conditions caused by these micro-organisms become more exact and, in some cases, specific. The sciences of immunology and serology are but outgrowths of researches begun in connection with the field of bacteriology and to-day we feel that we fail in our duty to our patient, if we do not make use of serums and anti-toxins and vaccines where these are indicated. With these agents at hand, not only can we cure certain diseases more rapidly but we can often prevent their onset. Fifty years ago many epidemics arose and many lives were lost for lack of the knowledge we now possess.

The advent of the *x*-ray and the discovery of radium, while of less importance than the development of bacteriology, have added greatly to the armamentarium of the specialist, in diseases of the ear, nose and throat. The former is of great aid in the diagnosis of some obscure conditions and adds confirmation to the clinical diagnosis in many other conditions. Indeed cases have been reported (Hays) of the existence of operative mastoiditis where there was no clinical evidence that the disease existed, nor was even suspected until *x*-ray pictures were obtained. That radium is of great value in malignant disease of the nose and throat no one can doubt if he has watched the improvement in the cases under careful use of this substance. Many patients have had no recurrence of signs or symptoms, for five years or more after the last application of radium. The day is at hand when every specialist feels that his equipment is incomplete unless he has easy access to the laboratory and the *x*-ray.

Of fundamental importance also are researches in the anatomy physiology and pathology of the head and neck. Many of the most valuable of these have taken place in the last quarter century and have given us a better understanding of this particular field. In recent years Schaeffer's monograph "The Nose and Olfactory Organ" is worthy of especial mention. Among others is Loeb's master work "Operative Surgery of the Nose, Throat and Ear" and Sluder's comprehensive work "Headaches and Eye Disorders of Nasal Origin."

Researches in these particular fields have been greatly stimulated by the invention of new and the perfection of old instruments, useful in examination of the special sense organs. Other instruments have been helpful in the treatment of diseased conditions found. Horace Green, who was one of the first to devote himself to diseases of the throat and respiratory tract, devised instruments for the removal of tonsils which are ingenious and effective and copied to-day. Not much later Dr. Jarvis devised a snare for the removal of the posterior tips of the inferior turbinate bodies and in 1872 Sasse perfected the spray. Joseph O'Dwyer rendered lasting service to the profession by perfecting a method of intubation (1880) while six years later Prof. T. R. French of Brooklyn devised a new method of photographing the human larynx which has never been improved. More recently the Hays' pharyngoscope, the Holmes' naso-pharyngoscope, the Sluder tonsilotome, Ballinger's ethmoid instruments and Chevalier Jackson's instruments for bronchoscopy and esophagsocopy have been given to profession. Other instruments of importance are the transillumination outfit of Coakley, the applicators, sounds and bougies of Yankauer, for the dilatation of the Eustachian tube, various types of adenoid currettes by Stubbs, Gottstein and La Force, the assorted patterns of cutting instruments for the intra-nasal work such as the Bosworth snare, the Grumwald forceps. One must add to this list the various types of suction apparatus for evacuation and medication of the nasal sinuses devised by Harrison, Smith, Coffin and Brawley. In their chronological order some of the most important events in the development of the specialties of Otology, Rhinology and Laryngology are as follows:

1870. Goltz gave a clear conception of the physiological significance of the semi-circular canals. J. C. A. Lucas in the same year studied the transmission of sounds through the cranial bones in aural disease and great advances in exploration were made by Friedrich Bezold. He gave the first clear description of mastoiditis in 1877.

In 1873, Clinton Wagner organized the Laryngolical Society of New York, the first association of its kind in existence. This same year Hermann Schwartz and Adolph Eysell described the method of opening the mastoid by chiseling. Their method was improved by Zaufal in 1884 and again by Kuster.

In 1876 the anatomy of the larynx and the physiology of the voice were investigated by Carl Merkel.

In 1880, the sciences of laryngology and rhinology were placed on a firm literary basis by the three treatises of J. Solin Cohen, Sir M. Mackenzie and Francke Huntington Bosworth.

During the years 1882—1892 Emil Zuckerkandl studied the anatomy and the pathology of the accessory sinuses.

1884, T. R. French perfected a method of photographing the larynx. In this same year the younger Retzius wrote an important monograph on the vertebrate ear, while Ewald studied audition in birds, deprived of the labyrinth and S. Stein, the function of the separate parts of the labyrinth. One year

later Hendrick Zwaardemaker wrote on the physiology of smell.

1890—97, Stacke introduced excision of the ossicles and in 1892 greatly improved the surgery of the middle ear.

In the twentieth century marked advances have been made in the surgical treatment of conditions in the ear, nose and throat requiring operation and especially in the fields of bronchoscopy and laryngoscopy. A great advance in nasal operations is the perfection of the submucous resection of the septum by Robert Krieg of Stuttgart.

In summing up the important lessons learned in the field of otology by the experience of many specialists, Davis in "Progress in Otology" points out (a) by keeping the nares and naso-pharynx clean we can reduce, to a considerable extent, the middle-ear abscesses in children, (b) we must avoid force in sprays and employ the nasal douche only after shrinking the membrane, (c) the importance of removing diseased tonsils or remnants of tonsils is established, (d) 75% of cases of suppurative sinus and middle-ear infection will benefit by vaccine therapy, (e) the radical mastoid operation is rarely indicated, (f) indiscriminate efforts to inflate the middle-ear are capable of lasting injury to the ear. In every case the nares must be prepared. (g) the popular impression that little can be done for deafness is erroneous but great patience is required in treatment. (h) most cases of deafness are of the slowly progressing type, due to causes easily removable or amenable to treatment in the early stages of auditory disturbance. (i) we must educate the public to the fact that nearly all diseases of the ear are secondary to infections in the nose and throat and that "deafness can be cured by being prevented."

Great advances have been made in the surgery of the nose and throat during the past year. It would be impossible, in a paper as short as this, to go into too great detail. From the field of rhinoplasty to the field of intracranial surgery, changes for the better have occurred. In order to simplify matters, and to give a concise picture of the more important advances, the authors will refer to their own recent experiences and to personal communications. During the past months, they have written letters to a number of prominent laryngologists and otologists, asking them what were the greatest advances in their own special fields.

A number of surgeons have been working in the field of plastic surgery of the face, chief among whom are Iglauer, Cohen and Tieck in this country and Gillies, in England. The latter has been working on maimed soldiers and has attained a marked degree of success. Iglauer has done most excellent work in this country. The main change of importance is that most of the plastic work on the nose has been done intranasally. For transplants of bone, a rib or a piece of tibia and lately, a part of the scapula has been used. (Iglauer) Tieck makes use of the turbinate bone for the same purpose. Raising the tip of the nose and removing excessive humps has become quite a simple matter. Iglauer writes that he has recently had an electric saw constructed which makes the operative procedure one of exceeding simplicity. Most of these operations are now performed painlessly under cocain anesthesia. The authors have performed quite a number of these operations at Sing Sing Prison, during the past year, with uniformly good results.

The treatment of nasal sinus disease has also been considerably advanced. Radicalism has turned to conservatism and greater diagnostic acumen is being employed. Sluder's book on the sinuses in relation to headache and eye disorders and Schaeffer's book on the embryology of the nasal sinuses are most illuminating. Sluder has written us to the effect that Mullin's (Colorado Springs) work on the lymphatic drainage of the sinuses is of the utmost importance. But, to our minds, by far the most important advance has been in proving the prevalence of sinus disease in children and the tracing of such diseased conditions to various rheumatic manifestations. The pioneer work was done by Dean of Iowa City and we are happy to quote from a recent letter of his: "It has been shown that parasinus disease may exist at any age. That, at the age of three, it may cause systemic complications. Sometimes it is an etiological factor in infectious arthritis, asthma and in infants and young children suffering from fever without definite cause. Its relation to bronchitis, laryngitis phlyctenular conjunctivitis and other infections of the eye and orbit, has been demonstrated. Perhaps the most important advance in therapy is that we have found that 80% of the chronic cases in infants and young children can be cured by the removal of diseased tonsils and adenoids, if present." In a recent paper, Dean has reported a number of young patients with severe arthritis, in whom the tonsils and adenoids were removed, without cure and who were greatly improved, and, in many instances cured, after the sinuses were properly drained.

The relation of eye diseases of abscure origin to sinuses infections or affections, has been fairly well established. What is of most interest, however, was a report made at a meeting of the New York Academy of Medicine recently, to the effect that many cases of rapid blindness were due to sinus disease in which an examination of the nasal chambers and radiographs were negative and yet the patients regained their sight shortly after the sinuses were opened up and drained. The claim was made that proper aeration of the nasal chambers caused the cure, by relieving pressure upon the optic nerve. Recently, one of us operated upon a similar case of thrombosis of the retinal veins in which the affection entirely disappeared after an evacuation of fluid in the sphenoid sinus.

A great deal of improvement in the routine methods of treatment of the nasal chambers has been made. Much has been accomplished by suitable suction apparatus which often allows of the clearing out of the sinuses without operation. Such procedures have been mentioned by Skillern of Philadelphia and Makenty of New York. If one adds to this the value of vaccine therapy in the treatment of the common mild infectious conditions, he will see that a great many of complaints can be cured by simple means. Within the past few months, the authors have made an important observation—that if the nasal mucosa be sprayed with a mild cocain and adrenalin solution and will not shrink against the bones, the inference may be made that there is a syphilic infiltration of this mucosa. This was proved in two cases which had come into their office for operation and both of whom cleared up under proper antispecific treatment.

The polypoid posterior tips of the inferior turbinate are receiving more attention than formerly. It had been the frequent complaint of patients, on whom septal operations had been performed, that

their nasal breathing had not been greatly improved. The reason was that a great deal of the obstruction had been caused by the posterior tips of the turbinates. This has resulted in what may be called the combined nasal operation which does not confine itself to just one part but includes any of the tissues which may be causing obstruction. This has been made possible by the keener use of infiltration anesthesia so that less bleeding and pain result. Lately the authors have been able to perform a submucous resection of the septum, remove the posterior tips of the inferior turbinate, excise the anterior portion of the middle turbinates and open both frontal sinuses and both antra at one sitting. The reaction was no greater than if only one operation had been performed.

The greatest advance in tonsil surgery has come from the more expert use of local anesthetics and the realization that hemorrhage can be more completely controlled. Operation upon the adult under local anesthesia is to be preferred. Two or three things of the greatest importance will be mentioned. The operation is made far less painful if the patient is given an injection of morphine before operation. Gwathmey, in numerous papers on synergistic analgesia, has insisted that morphin has a prolonged effect, sometimes the effect lasting six to eight times as long, if the morphin is dissolved in a 25% chemically pure magnesium sulphate solution. Two cubic centimetres of the solution should be used and the injection given deeply into the muscles of the gluteal region. In a personal letter, Gwathmey reiterates this claim which we can heartily endorse. We feel that a more universal trial of this combination should be given to all patients who are undergoing an operation, either under local or general anestheisa.

Tonsillar hemorrhage is now seldom serious. Coagulation times of the blood should always be made and, as an extra precaution, the patient should be given doses of calcium lactate. At the time of operation, bleeding from the upper part of the open fossa may be controlled with tampons immersed in thromboplastin solution and bleeding from the lower part may be entirely controlled by a proper litigation of the vessels. Sometimes, in prolonged oozing from venous channels, the hemorrhage can be immediately stopped by coating the two pillars, by taking a deep suture of catgut through them, in such a way as to bring them closely together. The catgut will slough off in a few days and a clean dry surface will remain.

The convalescence after tonsil operation can be made much easier by giving the patient a gargle of twenty-five grains of aspirin in a half glass of water. Part of the solution may be swallowed. Another suggestion for facilitating degultition is the following: the attendant grasps the head with the palms of the hands over both ears. He makes strong tension on the neck muscles by pulling the head up as far as possible. The patient is then told to drink. It is surprising ot see with what facility he does so. The procedure can be resorted to in children and thus there will be far more intake of fluids, a most necessary thing. In children rest in bed, for a few days after the tonsil operation, has been proved most necessary. At a meeting in New York, it was pointed out that, in a recent investigation, that children who were allowed to go home immediatly, after a tonsil and adenoid operation and for whom no after-care was given, lost a great deal of weight which it took them months to make up; on the contrary children who were allowed to stay in bed for a few days, lost little weight and made that up in a few days. The inference is clear. All children, no matter how well they react from the tonsil operation, should be forced to remain in bed for at least two to three days.

The question of lung abscess after the tonsil operation has lately received a great deal of attention. It isn't that more lung abscesses have occurred: it merely means that, without better methods of diagnosis, more lung abscesses have been discoverd. The consensus of opinion, up to a short time ago, was that the abscess could be blamed on the poor administration of the anesthetic but this theory received a blow on the head when Coakley and Pratt, a few months ago, reported a lung abscess occurring, after a tonsil operation, under local anesthesia. We are of the opinion that the accident is caused by a direct infarct into the lung, by means, as yet unknown. The abolition of all reflexes, so necessary during the tonsil operation, allows of the possibility of the inhalation of foreign substances into the lungs.

The great advances in the use of the direct laryngoscope, be it through the original instruments of Jackson or the suspension instruments of Killian and Lynch, have brought to light so many conditions within the lungs which can be treated by peroral endoscopy that it is almost impossible to go into details here. Jackson still stands preeminent as the man who can delve into almost every recess of the lungs but he is closely followed by such men as Lynch of New Orleans, Arrowsmith Lynah, Yankauer and Imperatori of New York. Foreign bodies which have been inhaled, are readily removed by the expert and various tumors and abscesses within the lungs or pressing on the lungs from without, have been diagnosticated by the bronchial tube. Yankauer has been able to wash out lung abscesses without any great difficulty and has cured many a patient who, otherwise would have gone to an early death. Lynah has been able to mark out abscesses of various kinds by the injection of bismuth paste into the cavity. Thus there is no end of wonders.

One cannot close the chapter upon throat conditions without referring to malignant disease. Many sarcomata of the nose, mouth and throat are discovered and, greatly to our relief, many of them respond to the proper use of radium, particularly if it is given in the early stages. This does not mean, however, that surgical intervention is not frequently necessary. But the combination of surgery and radium more often results in cure than the use of the knife alone. In a recent letter, Quick of the Memorial Hospital, New York, says, "During the past two years I feel that considerable advancement has been made in the use of radium of the upper respiratory tract. Personally I feel that all malignant lesions in this location are better treated by radium than by surgery. The problem has become largely one of accuracy in the application and distribution of radium in these lesions. The use of interstitial radiation, by means of burying emanation tubes uniformly throughout the growth, has made a very marked advance in this field." Quick has no doubt had as great an experience as anyone and the authors are personally acquainted with some of his work and can vouch for some of his astonishing results.

No startling advances have been made in the diagnosis or treatment of the acute conditions of the

ear. Dakin solution is more universally used in clearing up suppurations of the operated mastoid and one finds that, since the war, the otologist is more inclined to the closure of most of his mastoid wound, so that not so many unsightly scars are seen. One suggestion for the treatment of middle ear conditions is worth while considering. Instead of using the time-honored carbolic and glycerin solution the authors have had far better results from the instillation of drops of a 1% cocain in Dobell's solution to which is added ten minims of adrenalin to the semte. If such medicine is instilled into the ear canal every few hours and allowed to remain there for about five minutes, the intense engorgement of the drum will diminish and, often, an abscess will be aborted.

However, we feel that a great advance has been made in the handling of the deafened individual. More otologists are coming to the conclusion that universal catheterization and Politzeration have done about as much harm as good and that, if one desires to get relief, it is absolutely necessary to seek out etiological factors and to eliminate all causations as quickly as possible. Most cases of deaf ness are due to interference with the proper action of the eustachian tube. The tube is usually narrowed. It is not sufficient to open the tube temporarily with sounds and bougies. It must be kept permanently open by the elimination of all irritants to its mucosa. This may be accomplished in a number of ways. The removal of nasal obstructions and nose and throat infections is most important. Sometimes this can be accomplished without operation, by proper hygiene of the nose and throat or by building up the general system. In other cases, it is necessary to use some topical application. We have found that the best results are obtained by the direct application to the eustachian tubes and the surrounding parts of the high frequency current, through an especially made electrode. More and more are we coming to the conclusion that nature will take care of the ears far better than the physician, if he will confine himself to the elimination of all causative factors.

REFERENCES:

History of Medicine. Garrison.
Progress in Otology. J. L. Davis, Amer. Journal of Diseases of Children, June, 1915.
A Review of the Recent Advances in Otology. J. J. King, Medical Times, Jan., 1915.
Recent Progress in Laryngology, Otology and Rhinology. G. H. Makuen, Journal of the Amer. Med. Assn., Jan. 17, 1903.
Notes on Recent Advances in Laryngology and Rhinology. C. H. Knight, N. Y. Med. Jour., Oct. 13, 1906.
Some Reminiscences, Reflections and Confessions of a Laryngologist. J. M. Mackenzie. Annals of Otology, Mar., 1916.
A History of Surgery and Rhinology. Jonathan Wright.
Resume of the Literature on the Ear. J. MacCuen Smith, Amer. Jour. Dis. Children. Nov. 1, 1913.
2178 Broadway.

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A Christmas Thought.

Heaven's battlements are echoing with new-born fervor this glad Christmas Time, the age-old message, "Peace on Earth."

"Good Will to All Men," again rings out with the heart-felt significance of war-battered humanity hopefully facing peace.

Beneath a blazing star at Washington there shines into every night the truth: "Jesus, the Light of the World!"

The Nations of Earth, after centuries of turmoil, are beginning to understand.

It is His Birthday and the Babe of Bethlehem again sends His Love to the world.

May we have the grace and the wisdom to give Him more of ours in return!

REN MULFORD, JR.

December 25, 1921.

MY OBSERVATIONS OF MEDICAL PROGRESS IN THE LAST FIFTY YEARS.

G. H. SHERMAN, M.D.
Detroit, Mich.

Real medical progress started about fifty years ago when scientific methods of investigation concerning the cause of disease were brought into use and no doubt the last 40 years has added more useful knowledge concerning the cause, prevention and treatment of human afflictions than was ascertained during all the previous ages. I was fortunate enough to obtain my medical education sufficiently early in the course of events to catch a glimpse of the approaching new developments. I was graduated from the Medical Department of the North Western University of Chicago, then known as the Chicago Medical College, with the class of 1883. The paramount question under discussion at that time was whether germs were the cause of disease or whether germs made their appearance in diseased tissues. The faculty was about equally divided between those who believed in the causative relationship of germs and those who didn't. Our professor of pathology was quite positive that germs were not the cause, while Professor Gradel, our professor of physiology, took a decided stand in his contention that germs were the causative agents. He had carefully followed Pasteur's and Koch's works and was so imbued with the correctness of their contentions that he organized a private class and gave a course of lectures on bacteriology during the 1882-1883 college course, which I attended. This, I understand, was the first course of instruction given in this country on bacteriology. Professor Gradel was an excellent teacher and the rudiments in bacteriology which he then taught still stand. He published his lectures in book form. That course of lectures gave me a grasp of the new thought which has been of inestimable value to me, as bacteriologic and immunologic progress has developed.

Aseptic surgery had not come into use. The thought that a wound should be "cleansed" before applying the dressing prevailed. For this purpose a liberal quantity of tap water conveyed by means of a small hose attached to the city water supply was employed. I can still see Willis Andrews, who was then assisting his father in Mercy Hospital, carefully irrigate the wounds by means of this hose before closing them. Of course, aseptic wounds were rarely seen. The idea that germs were responsible for pus formation was, however, steadily gaining attention which resulted in attempts at antiseptic surgery as against aseptic surgery as it is now practiced. It was believed that the air was so contaminated with pathogenic bacteria that, to keep a wound free from infection it was necessary to sterilize the air in contact with the wound with antiseptics. To accomplish this, atomizers were constantly employed to spray a solution of carbolic acid over the wound during the operation. I had the privilege of seeing the first operation performed by this method in Michael Reese Hospital in the winter of 1883. The wound was sealed and healed by "first intention." It was soon found that the carbolic acid solution spray was unnecessary and a little later I saw the first aseptic operation in Mercy Hospital.

During my first few years' practice two cases impressed me profoundly. During the summer of 1885 a middle aged general practitioner requested me

to take charge of his practice while he was on his vacation. A few weeks after he returned he came down with acute appendicitis, then diagnosed by the best physicians in Detroit as paratyphlitis. Nothing was done for the poor man except giving some relief from pain and after a week of intense suffering he died. The inadequacy of the treatment employed by the foremost practitioners of the time impressed me very much. About a year later a relative of mine, a middle aged woman of former good health, became ill with the same trouble, which proved fatal to my medical friend. The old family physician diagnosed it as paratyphlitis and confessed that there was nothing that he could do. I called in the most prominent surgeon of Detroit. He concurred in the diagnosis and was ready to leave the house but on my suggestion took off his gloves again and made a vaginal examination. He found a boggy mass in the right upper pelvis that he felt certain contained pus. The next day he opened this per vagina and evacuated a large amount of bad smelling pus. After a somewhat prolonged illness the patient made a complete recovery. That was the first case of appendicitis cured by means of an operation in Detroit and if I had not insisted on a vaginal examination at the time no doubt she would have died within a few days .

Diphtheria was the great scourge of those days. It was thought that since we knew that the disease was caused by germs, germ destroying agents applied to the infected areas of the nose and throat would certainly be of great aid as remedial agents. In this we utterly failed. It was found that any antiseptic that could be employed could not be applied in sufficient strength and long enough to eradicate the infection, consequently there were enough germs left to continue the mischief until the patient developed an immunity or died. The helplessness in dealing with infectious diseases had a depressing effect on the practitioner who assumed the responsibility of caring for the sick. This was particularly felt by the doctor who had small children of his own. Diphtheria and scarlet fever were quite prevalent and where the diseases made their appearance it was expected that the patient stood only three chances out of four of recovering. Our therapeutic agents were so inefficient that it is not to be wondered at that therapeutic nihilism gained a foothold and that surgery was looked upon as the only real advantageous measure where it could be applied. In those days a prominent Detroit physician even advocated cutting the tonsil wide open in cases of diphtheria and claimed good results from such treatment.

Meantime aseptic surgery had made wonderful advances and the method of watchful waiting until a surgical condition developed, the expectant plan of treatment, became a prominent method of procedure among the best practitioners. Since therapeutic measures were of little practical value, attention was primarily directed toward preventive measures by isolation and disinfection. This was then, as now, inefficiently applied mainly because of the difficulty of finding the mild cases so the health authorities could take charge. As a suggestion to help overcome this difficulty, I read a paper entitled "The Eradication of Contagious Diseases" before the local medical society which was published in *The Physician and Surgeon*, July, 1894, in which I pointed out that the main difficulty surrounding quarantine problems is the expense of the quarantine to those quarantined; that when members of a household are locked up and deprived of following their usual vocation it means a financial loss to them in addition to the inconvenience which such detention entails, that quarantine is instituted for the benefit of the public and not for those afflicted with a contagious disease; that since quarantine is primarily intended to protect the public, the public or the state should pay for this protection by re-embursing the quarantined persons for the losses sustained as a result of such quarantine. I also stated that sickness always causes increased expense and to have the state add an additional burden for the protection of the public without due compensation is unjust and that laws which inflict an unjust burden are hard to enforce. Most people resent being quarantined, because they have a conscious or subconscious feeling that they are being punished for something for which they are not to blame. If quarantined persons would receive just compensation for the expenses incidental to being quarantined there would be no objection to being in quarantine and consequently no one would want to evade the law. This would bring out the mild cases and by this means the greatest menace in controlling infectious diseases would be eliminated.

In the following session of the Legislature a bill was introduced to provide for such compensation. The bill was supported by our local medical societies and the Michigan State Board of Health. On account of fearing an increase in taxation the bill failed to pass but provisions were made to supply food while under quarantine.

About the time we had almost despaired of procuring any practical method for dealing with infectious processes, Behring in 1891, as a result of his immunologic researches, announced his development of an antitoxin or immune serum that would protect from contracting, and would also cure cases of diphtheria. The thought that infectious diseases must run their course was so fixed in the minds of our best practitioners that it was hard to conceive of a remedy that would abort an infection but knowing that the remedies in use were of little or no value, at the first opportunity, I gave the antitoxin method a trial, the Behring preparation imported from Germany being used. The results were so striking that there could be no question of the advantage of this method of treatment. I knew that a horse was being immunized by Parke, Davis and Company. So when the small stock of German antitoxin was exhausted, I applied to Parke, Davis and Company for some and it so happened that they were just bottling the serum from the first bleeding. I procured a bottle before it was labeled and was told that that was the first dose that left the laboratory. It was soon found that "croup" cases would also recover if antitoxin were given freely in the early stages, especially if intubation was performed. Drs. E. J. Jennings and Burt Shurly performed intubations in several of my cases, but soon after seeing what could be accomplished I procured an intubation set and in addition to my own cases was frequently called to do the operation for other physicians. One case was of special interest. A physician called me hurriedly, saying the child was choking. I was there in less than five minutes, but the child, a boy of 8 years, had stopped breathing. The doctor pronounced him dead. I quickly inserted the tube and by artificial respiration revived the child. The doctor gave a liberal amount of antitoxin, resulting in a complete recovery.

Functioning as a consultant and intubator in diphtheria cases I was placed in a position to observe with what skeptical attitude many supposedly well informed doctors took to this new method of treament. Leading pediatrists had not endorsed it and that was reason enough for other physicians to refuse using it. On account of much adverse criticism it required more than ten years to bring this most wonderful remedy into general use, resulting in many deaths and unhappy families, which could have been avoided.

The success with diphtheria antitoxin led to the hope that all infectious diseases could be similarly cured by procuring an immune serum from some immunized animal. For a period of ten or fifteen years intensive efforts were made to produce various kinds of immune serums with varying success. Of these antitetanic serum as a prophylactic to prevent tetanus and anti-meningococcus serum for the treatments of cerebral spinal meningitis are the most useful and successful. I used antistreptococcus serum extensively in the treatment of streptococcus infections and when used early in the course of an infection found it of distinct value. My observations from the use of antistreptococcus serum in the treatment of acute inflammatory rheumatism and other infections were published in *American Medicine*, October 17, 1903, a second paper on the same subject was read before the Wayne County Medical Society, May 5, 1904, and a third before the Michigan State Medical Society, May 23, 25, 1906. The results from the use of antistreptococcus serum in the treatment of inflammatory rheumatism were certainly better than from the drug treatment. The main difficulty, however, was that if repeated doses were required the patient would soon become sensitized to horse protein when the treatment had to be discontinued on account of danger from anaphylaxis. Anti-pneumococcus serum had also made its appearance and was used with varying success. The main difficulty with these antiserums was, and still holds good, that animals can not be immunized to a sufficient degree of intensity to make a sufficiently small amount of their blood serum contain enough antibody for *continued* safe administration.

As a result of continued attempts at immunizing animals for the production of antiserums for the more common infecting organisms a great amount of knowledge accumulated concerning body responses to immunizing agents from which the thought that active immunization may be hastened during the course of an infection by injecting killed germs into healthy tissues remote from the infected area developed. On this thought Wright made the most valuable contribution when the results of his work appeared in 1906. By means of his opsonic index he was enabled to show that immunizing responses are obtained by the injection of much smaller doses of killed organisms than had been supposed and by his method of counting the organisms in a bacetrial suspension, accurate dosage became possible. The idea of inducing body tissues to produce antibodies by injecting killed organisms into healthy tissues and thus establishing an active immunity appealed to me. Some unpleasant reactions from the use of antistreptococcus serum in rheumatic cases induced me to try streptococcus vaccine in the treatment of rheumatism. I soon found that the therapeutic results were even better than from antistreptococcus serum and the danger from reactions was entirely avoided because a dose of vaccine did not contain enough protein to produce an anaphylactic shock. I soon employed vaccines in other infections and by the summer of 1907 had quite a varied experience with them.

Since a major portion of diseased conditions are due to infections by the more common infecting organisms it soon became apparent that this method of treatment would revolutionize our methods of preventing and treating most of the common ailments met with in every day practice and this has been realized. The typhoid scourge has been almost eliminated. Furunculosis and other skin infections are now being successfully treated by the immunizing method with bacterial vaccines. The duration of whooping cough has been cut down to less than half its former course if whooping cough vaccine is efficiently applied, and the mortality rate has been reduced to a negligible quantity. The various forms of arthritis are cured in less than half the time required by drug treatments. Colds and other respiratory infections are being aborted by vaccine injections. Clinical results from the early use of vaccines in the treatment of the pneumonias show the mortality rate reduced to as low as one per cent. Acute and chronic infections of an almost endless variety are being successfully treated with bacterial vaccines where other therapeutic measures have failed. Thousands of physicians are now using bacterial vaccines as a regular therapeutic agent in their daily routine practice and from the rapid advance that this method of treatment is making it will require but a few years to become universally applied where indicated.

Treatment of Pruritus Ani by Ionic Medication.

William A. Rolfe of Boston, at the last meeting of the American Proctologic Society, traced the etiology of pruritus ani and the probable avenues of infection of the peri-anal tissues by the streptococcus fecalis.

Cases of pruritus ani were divided into three main groups, namely: Infective cases with no demonstrable pathology present in the anal region. Cases with lesions present, such as hypertrophied and papillae, inflamed crypts, ulcers, anal sinuses, etc. Cases of anaphylactic origin.

The subject of ionization in general was touched on, the principal antiseptic ions were indicated, as also the manner in which the ionic effect is produced. The requisite kind of current, the proper voltage for ionization work, and the necessary apparatus were described.

The technique of the treatment and the solutions, which the writer finds of service, were given. Particular emphasis was placed on the necessity for not using strong irritating solutions, which do more harm than good, and also on the fact that severe cases should receive daily treatment until the pruritus is brought under such control that three applications per week of 20 minutes' duration are sufficient.

Attention was called to the objective signs of improvement, namely, more normal appearance of the skin, less moisture, gradual disappearance of blanched areas and less induration of the tissues. Coincident with these changes is a lessening of the severity of the pruritus and a lengthening of the intervals between attacks.

The writer was of the opinion that a cure is not to be expected until the bacterial infection is removed and the skin restored to its normal condition, both of which effects are accomplished by ionic medication.

A number of cases were cited by the writer which had been under treatment for several months, most of them receiving three treatments per week, for from three to six months. The result of treatment in this series of cases was very gratifying. The writer further outlined the management of these cases between treatments, laying emphasis on the importance of cleanliness and the use of inert dusting power to keep opposing surfaces dry.

The question of lowered resistance to streptococcic infection in this case of patients was touched on, and the writer spoke of the desirability of further investigation to determine the effect of ionic medication on the phagocytic power of the blood, in cases of pruritus ani.

FIFTY YEARS OF PREVENTIVE MEDICINE AND HYGIENE.

H. SHERIDAN BAKETEL, A.M., M.D., F.A.C.P.
PROFESSOR OF PREVENTIVE MEDICINE AND HYGIENE IN THE LONG ISLAND COLLEGE HOSPITAL,
New York.

As compared with the passage of time, fifty years is but as a moment. When preventive medicine and public health are considered, fifty years spells practically the entire period of existence of that branch of medicine as an entity. Very much interest has been aroused of late on account of the celebration in New York of the semi-centennial of the American Public Health Association. This interest will continue indefinitely as the result of the splendid book entitled: "A Half Century of Public Health," edited by Dr. M. P. Ravenel, of the University of Missouri, dedicated to the father of public health in this country—Dr. Stephen Smith, of New York. The contributions of nineteen eminent co-workers in the field of preventive medicine in this volume, public health and sanitation, will keep this subject very much in the public eye.[1]

The Metropolitan Health Board.

Previous to fifty years ago very little attention was paid to the health of the community. Physicians treated disease but did not attempt primarily to prevent it, and it was not until 1866 when Dr. Smith's efforts made possible the so-called Metropolitan Health Law, that a real impetus was given to the necessity of caring for the sanitation of the city and of assisting those aiding in the prevention of disease. Dr. Smith was encouraged to give this subject serious thought on account of an epidemic of typhus fever in Bellevue Hospital, in which institution he was an interne, shortly after his graduation city and of assisting those cmfwyppppy mahmfmm from the College of Physicians and Surgeons in 1850. Then of the twelve internes suffered from the disease and one died and Dr. Smith, having escaped, was appointed visiting physician to a fever hospital on Blackwell's Island. He became tremendously interested in the condition of the familes of those suffering from typhus. Most of them were Irish immigrants and their living conditions were so deplorable that he determined to remedy them. As a resule of his endeavors a sanitary inspection of the the city was made and in this worka c ommittee from the Council of Hygiene proved of material assistance to him. The expense was borne by the Citizens Association.

When the Metropolitan Health District was created Dr. Smith drafted the Health Bill, depending very largely upon the English Sanitary Laws. The bill was introduced into the New York Legislature in 1865 and the first hearing was before a joint committee, of which Andrew White, then a State Senator, and later president of Cornell University and American Ambassador to Germany, was chairman. Despite the efforts of the interested parties, the bill was defeated in the Assembly. The medical profession was sympathetic and energetic and at the next legislative session (1866) the bill was re-introduced and was enacted in law.

Practically coincident with the passage of the bill an epidemic of cholera ensued and the Metropolitan Health Board was thus afforded opportunity to test the value of the new preventive measures which it had advocated. The Board's activities were so exacting, and so effective that those who in alarm had fled the city returned. Their confidence was well placed, since the epidemic was promptly checked and the new sanitarians were thus placed high in public confidence.

Among the duties which this Board undertook and successfully carried out were (1) the underdrainage of the soil of the city, which did away with malaria; (2) the placing of the population then living in cellars in houses where air and sunlight were accessible; (3) removal of offensive industries from the residential districts to the rivers, and enforcement of rigid sanitary regulations.

The American Public Health Association.

Dr. Smith's work was received with such acclaim by the public that the idea of a National Health Association suggested itself to him, and this body was created April 18, 1872, with Dr. Smith as its first president. The association enjoyed a normal and healthy growth and today it stands out as the foremost health association of the world. It should be remembered at the time of its organization these were the only Boards of Health: Massachusetts, established in 1869; District of Columbia, 1870; California and Virginia, 1871. Until 1876 there were only twelve State Boards of Health. In 1873 but 134 cities had any kind of a health board. England was in advance of the United States in these matters, because, as a result of the three great epidemics of cholera in that country (1831, 1849, and 1854) a Royal Commission had investigated the cause of the epidemics, followed by the establishment of a general board of health.

Bacteriologic Progress.

While health matters were in this embryonic condition in America, Pasteur was at work in France. His papers on lactic acid fermentation and alcoholic fermentation, demonstrating the fact that living organisms were responsible for fermentation, appeared in 1857 and in the years 1870-1872 his work on "The Fermentation of Beer" brought out what is now known as pasteurization. In 1867 Mr. Lister, an English surgeon, carried out in practice the work he had done as a student of Pasteur and began what became known as antiseptic surgery. Pasteur really made the science of bacteriology possible and placed the burden of diagnosis on the laboratory. It should not be taken for granted that we had no knowledge of germ disease before that time. Rayer and Davaine had isolated the germ of anthrax in 1850. Delafond in 1850 had shown its power of vegetation, and Davaine, in 1863, had shown its causative relation to the disease. Pasteur brought the work to a successful conclusion by demonstrating the etiologic relation of the germ to the disease. In 1865 Klebs described the organisms of purulent nephritis; in 1866, Rindfleisch the organisms of pyemia. From this small beginning the work was pursued with renewed diligence. Pasteur discovered the bacillus of malignant edema in 1877 and the germ of chicken cholera in 1879, and Niesser at that time differentiated the gonococcus. In 1880 Pasteur and Sternberg, later Surgeon-General of the United States Army, working independently, discovered the pneumococcus, and Eberth and Koch, working independently, defined and described the typhoid bacillus. In 1882 Koch isolated the tubercle bacillus and he and Ogston, at about that same period, discovered the streptococcus. The next year Koch differentiated the organisms of malaria and infectious conjunctivitis, and at the same time Klebs differentiated and outlined the bacillus of

[1] This book has been freely drawn upon in the preparation of this review.

diphtheria. Koch made his full report on tuberculosis in 1884 and that year Loffler obtained pure cultures of the diphtheria bacillus.

The discovery of the various bacilli went on apace until 1919 when Noguchi isolated the bacillus of yellow fever—leporis lethalis.

Probably the credit for the science of bacteriology in this country should go to Prof. Thomas J. Burrill, who introduced the study of bacteria in the University of Illinois in the early 70s, and who in 1877 discovered the organism of the pear blight.

Dr. William H. Welch, now head of the School of Hygiene at Johns Hopkins University, in 1878 demonstrated bacteria at Bellevue Hospital Medical College, and the next year Dr. T. Mitchell Pruden carried out this same work at the College of Physicians and Surgeons of New York.

Prof. Gorham, of Brown, in his excellent contribution (Jubilee Historical Volume of the American Health Association, page 66), credits Dr. George M. Sternberg as the pioneer American bacteriologist. As the result of work which he did on the value of certain commercial disinfectants, Dr. Sternberg was awarded the Lomb prize offered by the American Public Health Association at its meeting in 1885. Sternberg began as early as 1871 to investigate yellow fever and, while his work was not distinctly positive in this connection, it was at his suggestion that the Yellow Fever Commission, established in 1900, solved the problem of the spread of the disease by stegomyia. As a result of the impetus given to bacteriologic work by Welch, Sternberg, Pruden and others, the public today is the tremendous benefactor.

The work done in the bacteriology of air, water and milk, has aided most materially in preventing disease. The study of bacteria in the air has resulted in our present knowledge of droplet infection and the communicability of diseases by close or intermediate contact. Gorham very well says that as a result of our present knowledge of bacteriology of air, our conception of fumigation has undergone a radical change. It was only in 1905 that terminal disinfection was abandoned by Chapin, of Providence, and ten years later New York City followed example. Today many of the larger cities have abandoned terminal disinfection and it will undoubtedly before long fall into innocuous desuetude.

Bacteriology of Water.

The presence of bacteria in water was first made known by Sanderson in 1871 and much subsequent work was done along these lines by Miquel, Angus Smith and Percy Frankland. The filtration of drinking water was in vogue for forty years before the presence of bacteria was discovered, a filter for the public water supply having been constructed in London in 1829. The Berlin water supply was filtered in 1856, but the first filter in the United States was erected in Poughkeepsie, N. Y., in 1871, and the first slow sand filter was installed in Lawrence, Mass., in 1893. While the coagulation methods of treating water were known very early, a mechanical filter was installed in Loraine, O., in 1897, with which the coagulants were utilized. With cities and towns throughout the country generally filtering their drinking water, a marked diminution in water-borne diseases is being noted.

Chlorination of water was first undertaken both in France and England in 1800. The use of chlorinated water as a deodorent, particularly of sewage, was first put into play in London in 1854. The initial employment of chlorine for the purpose of destroying bacteria was undertaken in 1893 in Brewster, N. Y., where chlorine was made from strong brine and the sewage from a number of houses was treated with it before being discharged into a stream which ran into one of the reservoirs supplying the city of New York. Since that time the possibilities of sewage chlorination have been frequently and satisfactorily demonstrated.

The use of chlorination for drinking water was first undertaken at Maidstone, England, in 1897 after a typhoid epidemic, but the first systematic use of chlorine for that purpose was not practically employed in England until 1904.

In this country the initial commercial use of chlorinated water was inaugurated in 1908 in the Union Stock Yards in Chicago; that same year Jersey City by a like process began the treatment of 40 million gallons of water per day. Chlorination of water is now a commonplace procedure and it is believed that considerably over three billion gallons are being daily treated in this country in like manner. The value of water chlorination was shown during the recent war.

Bacteriology of Milk.

Prof. H. W. Conn, of Wesleyan University, was the pioneer in this country in the bacteriologic study of milk. His first work was done in 1889. As a result of the efforts of our milk bacteriologists, milk-borne diseases have been reduced to a minimum and our local and state boards of health are keenly alert on this question. Every sign of milk-borne disease is promptly run down and in consequence epidemics from this cause are now a rarity.

In 1881 Koch discovered solid culture media so that he was able to isolate and study the bacteria in milk, and during the next nine years he gave this subject very careful consideration. In 1890 Babcock devised a simple method of determining the amount of butterfat in milk, which enabled purchasers to obtain milk with a definite quantity of this ingredient. The first medical milk commission was organized in 1892 and the movement in this direction was instituted by Dr. H. L. Coit, of Newark, N. J., who may indeed be called the father of good milk. Certified milk is the result of the work done by Dr. Coit, but to the health boards of the various states must be given the credit for the growing demand for milk as a food. Health officers have demonstrated and insisted that milk contains all the elements of a perfect food and they are avering this conclusion so assiduously that the general public is beginning to drink milk instead of the soft drinks which have hitherto been sold so extensively at soda fountains.

In 1892 Sedwick and Batchelder made their first bacterial count of market milk and Atwater worked out the food value of milk. Indeed between 1892 and 1900 milk bacteriology was established.

In 1901 Dr. William H. Park, of the New York City Board of Health, gave us his famous studies of bacteria in milk from the cow to the consumer. Pasteurizing came into vogue, certified milk commissions were formed in various cities and in 1906 the holding method of pasteurization was first introduced by Dr. North, of New York. Due to his work we now have a most satisfactory method for the pasteurization of milk. The National Commission of Milk Standards was established as a result of the recommendations of the New York Milk Commission (1911) and the principle of grading milk thereupon was put into vogue. These new standards were adopted by New York City in 1912.

The presence of vitamines in food, particularly in milk, was brought to the attention of the profession largely through the efforts of Casimir Funk in his book "Die Vitamine," published in 1914, and McCollum brought out the necessity for greater use of milk by the public, especially children. The original work on vitamines was carried out by Hopkins, of England, in 1906, and this was supplemented by the work of McCollum and Davis in 1913.

The work done in this food commodity during the last few years makes it seem probable that we have seen the last great epidemics communicated by milk. We believe that epidemics of typhoid fever, streptococcic sore throat, scarlet fever, and diphtheria, are a thing of the past.

Koch discovered the bacillus of human tuberculosis in 1882 and in 1884 Bang cultivated the germ of bovine tuberculosis from rabbits. In 1896 Theobald Smith reported that the germs of bovine tuberculosis were different from those of human tuberculosis and five years later Koch announced that human beings could not be infected by bovine tuberculosis. This fact, however, has been disproved by Ravenel, of the University of Missouri, who with other observers has noted that children can be infected by bovine tuberculosis, but the number of adults subject to this infection is exceedingly small.

Koch discovered tuberculin in 1890 and the use of this as a diagnostic agent has made it possible to eliminate tubercular cattle from herds.

The effect of the control of milk on infant mortality has been tremendous and as the milk depots, carried out by public and private agencies, are increased the mortality tables will be even farther attenuated. In 1920 Tacoma, Wash., had an infant mortality of 37; New York, 85; Philadelphia, 89; Boston, 101; Pittsburgh, 110; Kansas City, 129, and Nashville, Tenn., 203.

Disease Conveyed by Insects.

While the belief that flies might act as disease transfer agents was asserted as early as 1659, it was not until 1879 that Manson said the mosquito was a carrier of filaria. In 1895 Rose watched the development of a malarial parasite in mosquitoes. Since that time the mosquito has had many troubles laid at his door. A possible relationship between mosquitoes and yellow fever was suggested by Knott, of Mobile in 1848, but the first real experimental work on the subject was carried out by Finlay, of Havana, in 1882. The American Yellow Fever Commission, consisting of Drs. Reed, Carroll, Agramonte and Lazear, all surgeons in the United States Army, began its work in 1900 and as a result of their painstaking and self-sacrificing work the connection between the mosquito and yellow fever was definitely determined, although at the expense of the lives of two of the investigators. Carrying on this work, Major General Gorgas, Surgeon General of the Army, made it possible to complete the Panama Canal and in addition, carried on his splendid work in South America and in Africa to further his beneficent efforts in behalf of mankind. In the latter country he was stricken by what proved to be his final illness. The world owes an unpayable debt to this sweet dispositioned, charming and unusually capable scientist.

Most insect-borne diseases are tropical, but the temperate zone is interested in Rocky Mountain fever, transmitted by ticks; bubonic plague, transmitted by fleas on rats; typhoid and other diseases, transmitted by flies.

Many men have done a great deal of work on the typhoid-fly combination; however, it was to Sedgwick, of Massachusetts, in his report to the Massachusetts State Board of Health in 1892, that we were indebted for directing attention to the work of flies in spreading typhoid fever. Since that time many investigations have been made and we realize the absolute necessity of eradicating flies if we are to minimize disease.

Carriers.

Over forty years ago Pasteur and Sternberg found that the pneumococcus was sometimes present in healthy mouths. In 1884 Loffler reported that the bacillus of diphtheria could be present in a person who was not ill. Park and Beebe, of New York, reported the presence of diphtheria bacilli in the throats of healthy individuals in 1894. In 1900 a chronic urinary typhoid carrier was reported by Hortense Smith, of England, and Koch in 1902 established the fact that there are typhoid carriers. Our old friend, "Typhoid Mary," is now known to the entire medical world as an outstanding example of a carrier of the disease. It is probable that most communicable diseases, to a certain extent, are transmitted by carriers.

Immunity.

The value of cowpox vaccine as a smallpox preventive was known nearly one hundred years before preventive medicine began to ascend the medical scale, as Jenner made his discovery in 1775 and performed the first vaccination in 1796; but the real practical work in this connection was done by Pasteur when he made his study of chicken cholera immunity in 1879. Loffler assumed the presence of diphtheria toxin in 1884 and between the years of 1890 and 1893 Behring and Kitsato perfected the theory of inoculation of antitoxins, the diphtheria antotoxin being the first and most important to be studied. Theobald Smith suggested the use of a toxin antitoxin in 1907 and Behring first utilized it in 1912. Probably one of the most important contributions to medicine is the cutaneous toxin reaction of Schick for determining the presence of immunity to diphtheria, a subject which he presented to the profession in 1913.

Agglutination of bacteria by immune sera was applied practically for the first time in 1896 by Widal, who utilized it for the diagnosis of typhoid fever. Serum sickness was observed in 1874 by Dallera and in 1894 by Heubner, von Bokay, and von Pirquet. Schick in 1893 showed that serum sickness and anaphylaxis are identical, and much work has been done in this field by Theobold Smith, Rosenau and Anderson.

One of the greatest victories over disease is in vaccination against typhoid fever. This work was developed by men in France, Germany and England, and typhoid vaccination was introduced in India in 1898 and in the United States Army by Col. F. F. Russell in 1909. During the late war every American soldier who entered the army was subjected to a typhoid-paratyphoid vaccination and as a result typhoid fever was practically an unknown quantity. This record stands out in bold relief against the terrific mortality that followed this disease during the Spanish War.

Quarantine.

Quarantine was practiced in the Mediterranean and the Adriatic Sea as far back as 1348 when Venice quarantined against infected ships and travelers. In 1710 England by Parliamentary procedure established a quarantine act which was practiced whenever nec-

essary. Quarantine is actually older than the United States because it appears that in 1648 the General Court of Massachusetts Bay enacted a law providing for maritime quarantine against the West Indies. This act was repealed the next year upon the cessation of the epidemic. Several Colonies about that time passed quarantine acts, some of which are still upon the statute books. Isolation of those sick of smallpox was adopted in Massachusetts in 1678 and Rhode Island compelled keepers of public houses to report smallpox cases in 1721. Pesthouses were known in New England in 1743. Up to 1878 the quarantine in this country was in the hands of municipal and state authorities and there were as many kinds of quarantine as there were ports. In 1878 the Marine Hospital Service, which heretofore had cared for sick sailors, was authorized by Congress to prevent the introduction of infectious diseases and the Surgeon General was authorized to draft quarantine regulations. The next year medical officers were assigned to foreign consulates to see that the American sanitary regulations were more effective. The Service began its quarantine and public health work very actively in 1882 and quarantine stations were created at Ship Island in the Gulf of Mexico and Sapalo Sound in the South Atlantic in 1883. In 1893 an Act of Congress provided that no vessel from a foreign port should enter an American port unless it conformed to the provisions of the quarantine act, and since that time the Marine Hospital Service, now the United States Public Health Service, has functioned in this as in all other public health matters to the complete satisfaction of the people.

Many states and cities maintained quarantine stations but they gradually transferred their functions to the federal government. The last quarantine station to become federalized was that of the city of New York, which was taken over by the Public Health Service March 1, 1921. As it is, there is uniform control and conduct and the work is carried out admirably. It seemed in 1911 as if the United States might suffer from the inroads of cholera but the activities of the Public Health Service obviated an epidemic. Great fear was expressed on the part of the public that, owing to the ravages of disease following the war, this country would suffer from typhus or other epidemics in the winter of 1920-21, but nothing of this nature occurred and typhus, to a large extent, is an unknown quantity to American physicians.

As a result of the activities of the U. S. Public Health Service the American people can feel themselves amply protected against the invasion of disease from foreign countries.

Sewage Removal.

Since the MEDICAL TIMES was established the removal of sewage by sewers has been brought to a state of perfection. Sewers were known in the time of Rome, and London had sewers in the early part of 1800 but they were unsanitary and unsatisfactory. It was about half a century ago that the final disposal of sewage became very controversial. The English Commission began a study of the question in 1870 and in 1876 Dr. C. F. Folsom, of Boston, who had observed the work of the English Commission, felt that sand filtration was best adapted to the ordinary needs. The Massachusetts State Board of Health began sand filtration at its experiment station in Lawrence in 1888 and from that have grown the various types of sewage disposal. The trickling filters have become well adapted for ordinary use, although there are many modifications. In 1895 septic tanks to liquify most of the sludge by the work on anaerobic bacteria were suggested. This method has not been as satisfactory as was at first hoped and we are still working along lines which it is hoped will eventually prove satisfactory.

The removal of solid refuse has demanded the attention and study of sanitarians. The first incinerator for solid refuse was erected in 1874 at Nottingham, England, and this method with certain modifications is still in use. In 1906 an incinerator was built in Montreal and a little later a second one was constructed at West New Brighton, S. I. Most of these incinerators are for handling mixed refuse.

The disposal of garbage has also been taken up scientifically and this refuse is being fed to hogs in some cities, is buried in others, is reduced to grease and tankage in still others, depending upon local conditions. For a time, solid refuse from New York has been taken out to sea and dumped but this method does not prove staisfactory, particularly to those people who live along the beaches where the garbage is likely to be returned by the incoming tide.

In some American and many European cities steam is produced from burning garbage to operate electrical plants. Considerable work in the disposal of sewage and refuse has been done by the American Public Health Association through its committees.

Stream Pollution.

The pollution of streams by industrial wastes has been taken up very actively, the first work being done at the Lawrence Experiment Station in Massachusetts in 1895. Unfortunately, as the streams are under state rather than federal control, it has not been possible to enact uniform laws. In some places this pollution has been overcome by legislation but in others such a satisfactory solution has not been found. It is hoped that the time will come when a Federal Waterways Commission will have complete jurisdiction over all streams, thus enabling a centralized power to deal with this problem as is proper.

Food Control.

Up to 1871 practically no food regulation was attempted by either state or federal authorities and adulteration was widespread. Indeed in 1879 a report was made to the Medical Society of the State of New York, calling attention to the necessity of preventing food adulteration and reciting some of the large number of flagrant adulterants. Bread was sometimes made of an inferior flour, in which could be found ashes from the oven. Butter contained starch and curd. Coffee was adulterated with peas, beans, acorns, nutshells and burnt sugar, and milk was marketed containing water, burnt sugar and yellow dye.

In 1881 a food and drug law was enacted in New York, in Michigan, New Jersey and Illinois. This action was followed by many of the other states. Some good was accomplished but it was not until the passage of the U. S. Food and Drug Law in 1906 that definite benefit was observed. This law tended to make uniform the state laws so that today the majority of them follow the federal law. As a result of the splendid work accomplished by this Act, the food of the people is infinitely better than it was; the opportunity for adulteration is minimized; misbranding is punished by severe penalty, and food standards have increased very materially.

The past fifty years have also given a splendid opportunity for conserving food by dehydration, canning and refrigeration.

The Prevention and Treatment of Syphilis.

Syphilis has been the scourge of the ages and scientists have long sought therapeutic means for the treatment and possible eradication of this disease. It was left to Paul Ehrlich, of Frankfort, to produce salvarsan in 1910 and neosalvarsan in 1913 by a combination of work in chemical synthesis and biological examination along the lines of his theory of affinity between certain living cells and chemical substances. His study extended over many years and we now have reason to believe that salvarsan and its associates offer us the ideal remedial agent for treating syphilis. Indeed Loyd Thompson has said: "Its production places the name of Ehrlich by the side of those of John Hunter and Lord Lister as among the greatest medical men of all time." ("Syphilis" by Loyd Thompson, M.D., Lea & Febiger, Phila., 1920).

Herman A. Metz first imported salvarsan into the United States in 1911 and neosalvarsan in 1913, and he undertook their manufacture in 1917. He has now added Silver-salvarsan to the group. Arsphenamine compounds are also made by various other commercial laboratories in the United States. Not only have the arsenicals revolutionized the treatment of syphilis but they have made it possible to prevent the disease if the work of certain syphilologists can be definitely proven. According to their statements, men who have been exposed to syphilis, by being given an injection of one of the arsenicals, can be inoculated against the disease. Certain it is that in the great majority of cases which reach the physician's hands early—before the Wassermann reaction has become positive—are very likely to continue negative indefinitely if the salvarsan treatment is administered.

It seems to be the consensus that the discovery of salvarsan is as momentous as anything done in medicine. In connection with the treatment of syphilis by these new methods a definite amount of research work has been carried out, and during the war the use of prophylaxis against both syphilis and gonorrhea was productive of striking results. The amount of venereal disease among troops who were protected by prophylaxis was reduced to a minimum and it was definitely estatblished that well-guarded troops suffered little from the ravages of gonorrhea and syphilis.

Governmental Disease Control.

The state and municipal boards of health, with which we are so familiar today, have developed almost entirely during the past fifty years. Chapin, of Providence, in his splendid review of this subject (A Half Century of Public Health, page 137) says that "it is said that a Board of Health was established in Petersburg, Va. in 1780. One was certainly established in Philadelphia in 1794 and in New York in 1796. The first comprehensive state enactment for the establishment of a local health department was that of June 22, 1797 in Massachusetts. Under it Boston established a board of health in 1799 with Paul Revere as its head."

The novelty of this method of disease control was such that it made very slow headway. Only 32 boards were established between 1870 and 1873. Indeed the City of Chicago was without a health department until 1867. The first State Board of Health of a permanent nature was established in the State of Massachusetts in 1869 and when the American Public Health Association was born only Massachusetts, Virginia, California and Minnesota had state health boards, but today all cities and the great majority of small towns have local boards of health.

The first diagnostic laboratory was established by Dr. Hermann M. Biggs, now Commissioner of Health in the State of New York, in New York City in 1893.

In one particular we are behind the times and that is in the creation of hospitals for contagious diseases. Most communities have pesthouses but the proper contagious disease hospitals are the incident rather than the rule in the United States.

The control of tuberculosis is another of the activities which have come about as the result of municipal and state control of disease. The first state sanatorium was built by Massachusetts in 1908 but its predecessor in the private treatment of tuberculosis was the sanatorium at Saranac Lake, N. Y., established by Dr. E. L. Trudeau in 1885. All states now have sanitaria for the treatment of this disease and in the more populous states there are county hospitals as well, while larger cities are also supplied with this very necessary addition to its hospital facilities.

The State of Pennsylvania organized the State Tuberculosis Association in 1892 and in 1905 the National Association was organized.

The reduction of infant mortality has been a subject of extensive study on the part of state and municipal health boards. In 1885 the infant mortality in New York City was 273 per thousand living births. As a result of the care exercised in the development of the milk industry and the work done in the various milk stations this mortality dropped in 1915 to 94 per thousand.

Since the addition of a Department of Child Hygiene there has been further improvement. Child hygiene is now an important phase of the work of most federal, state and city health boards.

The medical supervision of school children has aided materially in the prevention of disease. In 1871 the school board of New York employed a physician to look after the health of teachers, but it was not until 1894 that the medical inspection of schools became a definite feature. In 1910 400 American cities carried on work of this character. A tremendous amount of good has been accomplished by the inspection of school children and more can be expected when this work is extended to every municipality and township.

Since then New York and most of the other large cities in the United States, have taken steps to have physicians from their health board staffs examine all public school pupils in relation to their physical condition. Defects of vision are noted, the condition of the child's mouth and teeth are ascertained, posture defects are recognized and all of this information is imparted to the parents or guardians of the pupils so that timely means may be employed to cure or to improve such shortcomings as are thus brought to light. The most recent activity in this connection is reported in a recent issue of the monthly publication issued by the U. S. Public Health Service. Under the direction of Dr. M. J. Lewi, President of the Foot Clinics of N. Y., a systematic examination of the feet of the pupils of a New York public school was made. The staff of the Foot Clinics, assisted by three well-known orthopaedic surgeons, conducted these examinations, which disclosed the fact that more than 50% of the pupils in all grades, from kindergarten to teachers' training classes, were more or less foot defective. The war board's experi-

ence showed a large percentage of foot lesions among those being examined for the Army and Navy but the statistics furnished by the foot examinations of school children demonstrate the need for effective propaganda to remedy or to abort the manifold lesions of the foot in the young which, uncorrected are bound to impair the effectiveness of those thus afflicted. This is decidedly advisable since it is averred that at least 80% of those thus suffering can be cured by simple exercises.

The work done by state boards of health has been to aid the local boards and to investigate, to advise and to educate the public; to guard the water supplies, to effect sewage disposal, and to develop the activities of communities as well as of individuals A great deal of local work has been done by state boards in connection with distinctly local conditions, such as the control of pellagra and trachoma. That this work has been of value is demonstrated by the lowering of the death rate in New York City which was 28 in 1869 and about 12 in 1920.

Chapin says that there has been a fall in the death rate in the rapidly expanding registration area of 4.7 per 100,000 in the last 20 years. Preventive medicine has brought this about. Typhoid fever will soon be only a historical recollection. Mortality from scarlet fever has decreased 90 per cent. and from diphtheria and tuberculosis, 50 per cent. Infant mortality has dropped more than 50 per cent. and diarrheal diseases caused four times as many deaths a half century ago as today. We must give a tremendous amount of credit for these fine results to the work done in child welfare throughout the country.

Child Hygiene.

When the MEDICAL TIMES was established no efforts at all were made to protect the child as such. Very few children's hospitals were in existence, there being one of each in Philadelphia, New York, Chicago and Boston. The Society for the Prevention of Cruelty to Children was established in 1875 and its members were able to arouse the people to the necessity of caring for the welfare of children. Charles Dickens, in the fifties of the nineteenth century, made a wondrous plea for the care of children in hospitals. At the time there was but one such institution in all England.

A Division of Child Hygiene was established by the Board of Health of New York City in 1908 and the federal Child Bureau was created by the federal government in 1912. Then the State of New York established its Division of Child Hygiene in the State Board of Health and in 1920 the National Child Health Council was formed in order to co-operate among the national child health organizations.

As a result of the work carried on by these various agencies, child labor has been largely done away with, there being some sort of a law against the employment of child labor in each of the states.

Delinquent children have been cared for, having been taken out of the jails to which they had been assigned and put into proper institutions where their physical and mental defects could be bettered. Courts were established for children, the first having been created in Illinois in 1899. Day nurseries have become common and their work is of a high order, although in 1872 there were only five such units throughout the country.

The fight against malnutrition was started in New York in 1908, and today there are nutritional clinics in most of the large cities and even in many smaller municipalities. The City of New York provides hot lunches for school children in 26 schools and feeds 3,000 children a day, at cost.

Such organizations as the boy scouts, the girl scouts, campfire girls, health crusaders, and others have done much to educate the adults as to the value of prevention of disease and the betterment of health conditions.

Prenatal work was established in New York City and the New York Outdoor Medical Clinic in 1908 began what has proved to be a very fine and substantial work in the improvement of the condition of expectant mothers.

Another factor in the preservation of infant life was the regulation of midwifery. Bellevue Hospital established a school for midwives in 1913, although the City of New York had regulated the practice of midwives since 1907.

Housing and Ventilation.

Another feature, having to do with public health, which has shown marked progress is the matter of housing. Fifty years ago all large cities possessed indescribable slums, with poorly ventilated houses, many of which contained rooms without any light or means of ventilation. The situation in New York was particularly bad because there were no legal requirements upon which the authorities could act and as a matter of fact the education of the public was so elementary that the necessity for light and ventilation was not recognized.

In 1879 the State of New York passed a tenement house law, the feature of which was the airshaft device; the purpose was to carry air into unventilated rooms. This airshaft has been termed "a culture tube on a gigantic scale" and as a result the requirements have been changed so that rooms now must be ventilated either from the street or from a backyard, to insure the constant circulation of air. As the airshafts proved of no benefit in furnishing light to the rooms it was recognized that something must be done to permit people to spend their days in rooms which are lighted naturally, and beginning about 20 years ago there came a revolution in feeling, which effected the passage of a sanitary law making it obligatory in New York that all rooms be lighted from outside. The distance between many buildings is so small that oftentimes these rooms do not obtain an adequate amount of light, so the National Housing Association is busily engaged on this work and it will not be long before new standards will be determined to remedy this situation.

The disposal of sewage, as has already been shown, is a real victory for the advocates of preventive medicine and this great problem has actually been solved within the past 20 years. Fifty years ago practically all human wastes were deposited in the old-fashioned privy vaults. Then as sewers became installed there was a change to the sanitary closet and, under the tenement house law already mentioned, it became mandatory that modern sanitary waterclosets be included in all toilet paraphenalia.

In New York City the old-fashioned vaults have disappeared but, strange as it may seem, in a survey made less than ten years ago in forty cities, one city of 490,000 population was found to have 27,000 privy vaults, 20,000 of which could have been easily connected with the sewerage system. However progress is being made along these lines and probably

ten years from now these vaults in all sewered communities will have disappeared.

Modern sanitary plumbing is a development of the p st half century and has now become an established feature.

The war did very much for housing. Owing to the lack of building materials, together with the high price of labor, people were in a serious way for homes. The Government built a number of model towns and cities for its workers and the excellence of these places served as a stimulus to prospective builders, so that now with the lowering of prices there has been an unusual exodus from the city to the suburbs and to the country. Many tenement and apartment house dwellers have abandoned the city permanently to take up their residences in places where children may be freed from the untoward influences of the city, there to enjoy the benefits of town and country life. All this has and will continue to lower the sickness and death rate and, as most of the suburban towns have good health departments, this steady exodus should tend to the permanancy of the improved conditions here noted. The people in building their houses have learned particularly of the necessity for thorough ventilation and many of the better houses are being equipped with a practical ventilating system.

School houses and public buildings are now necessarily equipped with some form of a mechanical ventilator, so that we are no longer compelled to inhale the excess CO_2 which was present in places of this character 20 years or more ago.

The driving out of the sweatshops from New York and other cities a few years ago and the introduction of proper ventilation has much to do with the health of workers.

Hand in hand with this have gone the changes in methods of heating both houses and larger buildings. Steam and hot water have come into vogue more and more, while coal stoves have disappeared to a large extent in cities and larger towns. Hot air furnaces have been greatly improved so that they are not the dust-raising, health disturbers of a generation ago.

In the school houses of today we find gravity ventilation with direct heat, and plenum, combined plenum and exhaust or exhaust alone with direct, indirect heat, most commonly used.

Industrial Hygiene.

Industrial hygiene was a new term a few years ago and even yet it is not entirely familiar to the general public. The care of the workers in earlier days was a stench in the nostrils of decent people. Epidemics without number were either started or spread by the concentration of workers in inadequate quarters with imperfect ventilation and all its concomitant features. What was true of the United States was also true of Great Britain and the other manufacturing countries of Europe.

In the eighties we began to enact federal labor legislation. The first of real importance was the act of May 24, 1888, prescribing eight hours as a day's labor for lettercarriers. In 1890-1891, Chapter 564 of the act of August 19, 1890, covered inspections of defective conditions, ventilation, safety cages, etc., of coalmines, and children under the age of 12 were prohibited from working underground in mines. A U. S. Statute in 1901 abolished peonage and another law provided for the abandonment of flogging and other forms of corporal punishment on board ships. In 1906 an act was passed, regulating the hours of labor of employees on railroads and in 1908 the liability of railroad companies for injuries to employees became statutory.

The U. S. Commission of Labor in 1892 compiled the labor laws of the various states up to the close of the year 1890 and many of the laws in force at that time dealt with the protection of women and children employees. Massachusetts was probably the first state to take up factory legislation. In 1887 it passed an act to secure proper sanitary provisions in factories and in workshops. In 1891 the corps of factory inspectors was increased to include two women. This corps later on gave way to state health inspectors. As a result of the work done in the State of Massachusetts in factory inspection, other states passed laws of a similar nature, so that now the great majority of states have definite legislation on this subject. For example, 52 states and territories require seats for women in certain occupations; 36 require guards for dangerous machinery and 26 have laws providing for the protection of employees of buildings by way of safety scaffolds and the like; 34 require fire-escapes; 35 have laws on the sanitation of factories and work-shops, and 43 have passed laws referring to toilet rooms and washing facilities.

Workmen's compensation is in vogue in 45 states and in 3 territories (the majority provide for industrial accident) while but 15 provide for compensation in certain occupational diseases. State commissions were first instituted in New York, Wisconsin and Minnesota in 1909.

Industrial hygiene has been assisted to a marked extent by the U. S. Public Health Service which, as has already been pointed out, was established as the Marine Hospital Service and was changed in name in 1902 from the Public Health and Marine Hospital Service to its present title. In 1915 a Division of Industrial Hygiene and Sanitation was established by this service under the direction of Dr. J. W. Schereschewsky, at present Assistant Surgeon General, and a research laboratory was developed in Pittsburg where investigations in industrial sanitation were carried on. This laboratory was later transferred to Washington and is now the Division of Industrial Hygiene and Sanitation of the Public Health Service. The Public Health Service has given out this program as part of the work which it contemplates in this connection:

(a) Continuing and extending health surveys in industry with a view to determining precisely the nature of the health hazards and the measures needed to correct them.

(b) Securing adequate reports of the prevalence of disease among employees and the sanitary conditions in industrial establishments and communities.

(c) National development of adequate systems of medical and surgical supervision of employees in places of employment.

(d) Establishment by the Public Health Service, in co-operation with the Department of Labor, of minimum standards of industrial hygiene and the prevention of occupational diseases.

(e) Improvement of the sanitation of industrial communities by officers of the Public Health Service and co-operation with state and local health authorities and other agencies.

(f) Medical and sanitary supervision by the Public Health Service of civil industrial establishments owned or operated by the Federal Government.

This is another gratifying instance of the splendid character of the work being done by this government medical branch.

Activities along these lines have developed a body of men known as industrial physicians or surgeons who are devoting their entire time to the study of industrial hygiene, industrial health and sanitation. Many of the medical schools have taken up the work of teaching industrial health either independently or in connection with the chair of Hygiene, Preventive Medicine, Sanitation, or by whatever name the subject is characterized.

At the Long Island College Hospital, under the chair of Preventive Medicine and Hygiene, there has been developed a lectureship on Industrial Health, presided over by Dr. A. E. Shipley. His work is of a most practical nature and he gives the students a very comprehensive idea of the work demanded of the factory physician—as a physician, a surgeon, a sanitarian and an executive. Indeed the interest in this work has been so marked that last year the profession of Brooklyn and Long Island were invited to avail themselves of the opportunity offered by courses given under this chair. Many physicians accepted this invitation and, from all reports received, valuable postgraduate instruction has been accorded along these lines. Other colleges are taking up this phase of the subject with satisfaction.

In this connection it might not be out of place to state that during the past fifty years hygiene has been stimulated by the establishment of chairs in all the medical schools of the country. Many of the courses have been more or less elementary but within the past few years more elaborate courses in preventive medicine and hygiene have been developed, some of which lead to the degree of Dr. P.H. The courses at University of Pennsylvania, New York University, Yale, Harvard, and other institutions are of the highest type. In 1918 John Hopkins established a "School of Hygiene and Public Health" under the direction of Dr. William H. Welch. This is the last word in instruction along these lines and is probably the beginning of a remarkable advance in preventive medicine and hygiene.

Occupational Disease Clinics.

The first clinic of this nature was established at Cornell University Medical College in 1910 by Dr. W. Gilman Thompson. In 1911 Rush Medical College (University of Chicago) opened a special occupational disease clinic. This was followed in 1913 by the Massachusetts General Hospital and in 1914 by the Hospital of the University of Pennsylvania. There are now a great many occupational disease clinics throughout the country. This, in addition to the employment by individual companies of medical men, has done a great deal to solve the problem of economic loss in industry coming from disease and accident among workers.

The war has done much to increase our knowledge of how to help the disabled worker. Dr. W. Gilman Thompson established a Reconstruction Clinic for disabled soldiers on July 18, 1918, and this clinic has developed into a reconstruction hospital located in the plant of the old Park Hospital in New York City. It has departments of hydrotherapy, mechanotherapy, electrotherapy and thermotherapy, and it has done splendid work in putting disabled soldiers in a position whereby they can care for themselves.

Industrial Physicians and Surgeons.

The importance of industrial physicians was recognized in 1916 by the formation of the American Association of Industrial Physicians and Surgeons, an organization which now has six hundred members. The purpose of its members is to prevent disease and accident; supervise health and to afford adequate care for all who are disabled; to aid the personnel managers in selecting work according to the physical qualifications of the individual; to furnish vocational training for new occupations when men are disabled in their old ones; to see that disabled men and their dependents have sufficient means upon which to subsist until the breadwinner is in a position to work, and to look out for the economic and living conditions of familes of workers.

In 1909 Dr. Irving Fisher said that "three million persons are seriously ill at all times and that 42 per cent. of this illness is preventable." Dr .Eugene L. Fisk has demonstrated that 2¼ per cent. of wage earners are constantly ill enough to be incapacitated. This would indicate that the number constantly ill is 600,000 less than eleven years ago, and Dr. Fisk is of the opinion that by constant supervision and physical examination of wage earners there will be a much greater reduction in the number of people ill and in the number of days of illness of workers. Some of the figures which Dr. Fisk shows are most enlightening and they all go to prove that with the proper attention to the health of the worker and of his family the illness rate and the death rate can be largely reduced.

Public Health Nursing.

District nursing was developed in the United States beginning with 1877 when it was carried out by some of the denominations in New York. In Boston and Philadelphia a District Nursing Association was established in 1886 and in Chicago in 1899. New York took up the work of the Nurses' Settlement on the East side in 1893. In 1910 Miss Adelaide Nutting established a course in public health nursing at Teachers College, New York University, and the National Organization of Public Nursing was created in 1912. Since that time the growth of this work has been rapid, and it has proven of unusual importance in caring for the sick and in aiding in the prevention of disease. There are now about 11,000 nurses employed in departments of health education, in municipalities and states and in the great industrial corporations and they always have the assistance of the Red Cross in times of stress. Indeed to the nurses is often due great credit for the results obtained by the medical profession.

Local Anesthesia.

The discussion of local anesthesia does not strictly have a place in an article on the progress of preventive medicine but its introduction has prevented so much pain and so much loss of life that it may not be out of place to briefly mention it in this connection. The compression of nerve trunks was known to the Arabs and was put into play by Paré in the seventeenth century. It is still being utilized in the form of the Esmarch elastic bandage for the purpose of producing anesthesia of the distal part of the limb. Bartholinus used cold as a means of producing local insensibility as far back as the sixteenth century and Larrey amputated on the battlefields in 1807 by anesthetizing the extremities at low temperatures.

Sis Benjamin Richardson was the father of the ether spray which he brought to the attention of the medical world in 1886 and this has developed into the ethyl chlorid spray of today

Cocain was introduced by Koller in 1884 but on account of the dangers attendant upon its use, local anesthesia did not take the place it deserved until the discovery of novocain by Einhorn. It was first put into clinical use by Braun in 1905 and it has gone on in steadily increasing favor until today it is the local anesthetic preferred by the majority of practitioners. Originally local anesthesia was utilized for distinctly local operations (many of a superficial character) but under the present methods of refinement, practically all major operations can be performed under novocain anesthesia.

One of the leading examplars of this method is Robert E. Farr, of Minneapolis, who has effected a technic now widely utilized by surgeons. Farr has performed practically all of the major operations under this form of anesthesia and only occasionally does he adopt a general anesthetic in any of his operative procedures.

Louis Dunn, of Minneapolis, is another worker in this field. He has had unusual success in carrying out his operative work under local anesthesia.

Rudolph Matas and Carroll Allen of New Orleans, A. E. Hertzler of Kansas City and the late John A. Bodine of New York, are names which will ever be connected with this important work.

Many lives have been saved by employing this form of anesthesia and the methods of utilizing this anesthetic are now being so perfected that it is safe to assume that in the future the bulk of our operations will be performed while the patient is entirely conscious of his surroundings.

The purpose of this review in the short space at our disposal in this Journal is to present to the physician a very brief idea of the great strides made in preventive medicine during the past fifty years. Men who are interested in this work will find many books which are enlightening. One of the most entertaining as well as valuable contributions is Col. Garrison's "History of Medicine," the third edition of which has just been published by W. S. Saunders Co., All the leading textbooks on preventive medicine and hygiene, or health and sanitation are sufficiently comprehensive to give the reader the detail of data which he may desire, but there has been set down herein sufficient to make the profession realize that in no branch of medicine has there been greater progress during the past half century than in that which has to do with the prevention of disease.

16 Fifth Ave.

Tuberculosis Meningitis and Syphilis

It is important to guard against diagnosing tuberculous meningitis when the trouble is merely a meningeal reaction to inherited syphilis. Certainty is possible only when tubercle bacilli are found in the cerebrospinal fluid. The article is based on 20 cases of actual tuberculous meningitis in children with inherited syphilis, and this experience warns to apply treatment as for syphilis in every case of tuberculous and other meningitis, as we can never categorically deny the possibility of recognized inherited syphilis. Mercury inunctions are the main reliance.

The authors have never ventured to give arsenicals in these dubious cases. The specific treatment has no appreciable action in true tuberculous meningitis. When the children in a family dies of meningitis, syphilis should be sought in the parents.—(*Archiv. de Méd. des Enfants,* September, 1921.)

Gonorrheal Cystitis

Linzenmeier reports two cases of gonorrheal cystitis in unmarried gravidae. In summing up he says that cystitis corporis gonorrhoica is a rare affection and that the diagnosis is not assured unless by a bladder puncture (which he finds entirely harmless) a culture of gonococci is secured. Cystoscopy will, in many cases, put us on the right track, but it is not decisive. —(*Zent. für Gyn.,* July 30, 1921.

General Scientific

THE REQUIREMENTS FOR GOOD LOCAL ANAESTHESIA

Louis Dunn, M.D.,
Minneapolis, Minn.

The author became interested in the use of local anaesthesia in major operations some years ago. At the time he found himself handicapped by being limited to the use of the awkward and ineffcient glass syringe, still used so generally by surgeons of today. This difficulty was ably expressed in 1917 by Dr. R. E. Farr, of Minneapolis: "Anyone who has had much experience in the use of local anaesthesia knows that the shortcomings of syringes are manifold. They are difficult to keep in order, easily broken; if large, they are difficult to manipulate; if small, they must be refilled innumerable times in doing a major operation, this work often requiring the services of one or more extra nurses. Unless carefully constructed and kept perfectly clean, the pistons do not glide smoothly and do not allow the uniform infitration of the tissues so essential to perfect anæsthesia without trauma to the tissues. The introduction of any considerable amount of fluid is slow and exceedingly irksome to the surgeon."

The shortcomings of the ordinary glass syringe as the medium of local infiltration were so apparent, that means were taken to improve it. The author placed a valve between the solution and the syringe, obviating the necessity of disconnecting the syringe from the needle or withdrawing the needle from the tissues. This was a crude affair at first but it had many advantages over any syringe at that time. Each defect has been eliminated until finally a perfected automatic syringe outfit has been evolved.

Requirements for Good Local Anaesthesia

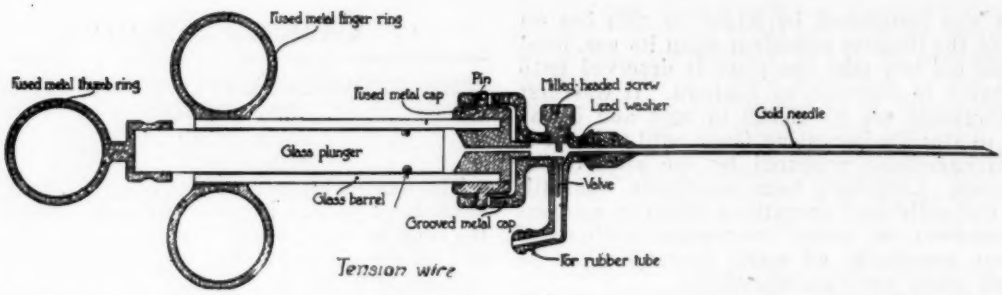
The general requirements for operating under local anaesthesia are three fold: (1) an isotonic, anaesthetic solution, (2) an efficient injecting apparatus and (3) a proper operative technique.

(1) Solution

It is not desired at this time to enter further into the question of the anaesthetic solution except to state that novocain in ½ to 1 per cent. solution with the addition of suprarenin is the local anaesthetic of choice.

(2) Injecting Apparatus

A properly constructed apparatus is essential in order to infiltrate the tissue easily and accurately with the minimum amount of solution. The requirements for an ideal outfit are four in number; first and most important: The syringe must be adapted for infiltration. An automatic valve of some type is essential to eliminate the necessity of detaching the syringe for refilling. The syringe itself must be small in size in order to fit the palm of the hand comfortably and to permit the accurate deposition of small quantities of fluid. The barrel of the syringe should be of glass, so that air or blood will be instantly detected. The plunger should be ground with unusual accuracy and with great smoothness; to prevent leakage, and to insure a smooth action with free gliding in the barrel at all times without jamming or sticking. Second: The apparatus should be durable. The syringe should be made of glass that is tough and will withstand high temperature and that does not break easily. The needles should be rust proof and hold their temper. The washers

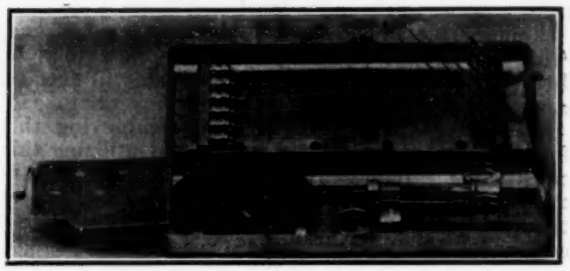


should be of metal and the valve rust proof. Third: the apparatus should be convenient, compact and easily portable. Fourth: Sterilization of the equipment should be easy and thorough, preferably by boiling.

Syringe

All of these requirements were considered and all of them met in the construction of this automatic syringe outfit. After experimenting for three years, it was found that the Vim DeLuxe syringe, originally designed for high-pressure dental infiltration, was best fitted for this work. This instrument is made from Emerald gauge glass which is very hard, takes a high polish, and withstands boiling. The metal mountings are fused—not cemented to the glass barrel. (Fig. 1.) This syringe, under test, stands seventy-five pounds pressure to the square inch, without breaking or leaking. The syringe is of 3 c.c. capacity. This is large enough since it can be instantly filled by the automatic valve. The small diameter plunger operates very smoothly—so smoothly that it feels like velvet, and permits the employment of great force when needed, and is especially valuable in the delicacy of touch with which small quantities of solution can be used. This feature can be appreciated when it is realized that the same length of plunger travel of a 20 c.c. all-glass syringe ejects five times the capacity of the smaller 3 c.c. Vim DeLuxe syringe. (Fig. 2.) While large quantities of novocain solution may usually be used with impunity, yet it is conservative to use the minimum quantity.

needle prevents any possibility of the needle jumping off under heavy pressure. This method of attachment of syringe and needle to valve chamber insures a rigid instrument; one that will not accidentally come apart, and one which is dependable. From the valve chamber a rubber tube leads to the flask containing the solution, a weighted end holding the tubing at the bottom of the flask. The valve is of an



(Fig. 4) Case and contents.

inverted umbrella shape and of the drop type. (Fig. 1.) The valve will operate in any position in which the syringe may be used—upside down as well as horizontally. The valve prevents the fluid from being forced back into the flask from which it has been drawn, while the return of the solution, on withdrawal of the plunger, is prevented by the tissue acting as a valve on the beveled end of the needle. Should the needle point be within a blood-vessel when suction is made, the entrance of the blood into

(Fig. 2) The same length of plunger travel which discharges 1 c.c. of fluid in a 3 c.c. syringe will discharge 5 c.c. of fluid in a 20 c.c. syringe.

(Fig. 5) The needle point and the weighted end of the rubber tube are submerged in the solution, with a fw strokes of the plunger the air is expelled and replaced with the solution.

(Fig. 3) Syringe and small sharp Luer Needle as used to produce an anaesthetic wheal.

Valve.

The use of a small capacity syringe is made possible by placing an automatic valve between the syringe and the solution. This is attached to the syringe by a bayonet joint. The Luer tip of the syringe fits tightly into the valve chamber and is rigidly locked by an eighth turn of the syringe. The valve chamber is equipped with a threaded nipple for the attachment of threaded needles. The threaded

the syringe is immediately noted and the needle is either pushed forward or slightly withdrawn.

Needles

The needle to be used for local infiltration has been a subject for discussion. The quality or rigidity and the sharp point of the steel needle make it a great favorite. The certainty of rusting is against a steel needle. Platinum and nickel needles are soft and easily ruined. The 14 karat-Durogold tempered

(Fig. 6) The needle having been introduced through the anaesthetic wheal, the solution is injected in a steady stream as the needle point is kept constantly on the move.

(Fig. 7) The Duro-Gold needle is sufficiently rigid to insure against breakage or bending, yet it is flexible enough to traverse the body tissues at a different angle from the axis of the syringe.

(Fig. 8) The needle is first inserted perpendicular to the surface. By withdrawing it to the skin and reintroducing it at a slightly different angle, a wall of solution is placed to interrupt the nerve supply or to anaesthetize the field of operation.

needle fulfills all requirements. It is non-corrosive; has a fine point; and is sufficiently rigid, yet flexible enough (Fig. 7) to traverse the body tissues at a different angle from the axis of the syringe. This gold needle is, of course, rust proof, and may be repointed from time to time. It should last for years and will not fail the surgeon when he needs it most.

Two kinds of needles are available in this outfit, both made of Durogold. At one end five Luer slip needles; at the other end five threaded hub needles. The short, fine Luer needles are used to produce the intradermal anaesthetic wheal (Fig. 3). The longer Luer needles are used for injection of subcutaneous growths when only small quantities of Novocain are required. When the Luer tip needle is used it is attached directly to the syringe. The threaded needles (Fig. 1), however, are attached to the valve chamber. These needles are five in number and very in length from two to four inches. Extra heavy hubs are used on all needles.

The sharpness of the Luer needles should be particularly emphasized because the confidence of the patient and his comfort may depend upon it. In fact Hertzler recommends that "For operating on his friends, the operator will do well to invariably use a new needle. With a little care needles can be kept sharp and by having a number of needles in the case, sharp ones are always available.

Case

The metal case is pocket size. It is perforated by numerous openings to permit of water or steam sterilization (Fig. 4). The needles, held on cross bars, are raised and lowered by a lever to facilitate their removal and replacement. The case protects the glass syringe from breakage and the needle points from becoming dull. It is compact, easily carried and readily sterfilized as a unit with the other instruments.

(3) Technique

The Dunn outfit is very simple in construction, but highly efficient and very easy to use. Having assembled the syringe, valve, and needles in the perforated metal case, they are sterilized with the other instruments selected for the operation. The case unopened is placed on the instrument table, and handled only by the surgeon himself. An unsterile nurse brings to the table nurse (first unloosening the outer towel), two flasks, each containing four ounces of the novocain solution. One flask is held in reserve in the event that more solution is needed, two towels are employed in order to keep the outside of the flask sterile if it is not used, thus obviating the necessity of a second sterilization. The nurse is taught to ask, "How much suprarenin shall I add?" With a sterile dropper the designated quantity of the 1-1000 suprarenin is added to the anaesthetic solution and shaken. A small quantity of this novocain-suprarenin solution is poured into a medicine glass, the syringe filled from this and a small gauged short, sharp Luer needle selected and attached to the Luer syringe tip (Fig. 3). With this an anaesthetic wheal is made in the skin. The Luer needle is removed and replaced in the case. A long screw hub needle is then attached to the valve chamber (Fig. 1). This is slipped over the Luer point of the syringe and locked firmly into place by the bayonet slotted joint. The assistant or nurse holds the flask at any convenient level. The needle point and the weighted end of the rubber tube are submerged in the solution (Fig. 5). With a few strokes of the plunger the air is expelled and replaced with the solution. The needle having been introduced through the anaesthetic wheal (Fig. 6), the solution is injected in a steady stream as the needle point is kept constantly on the move. A steady, even pressure is maintained on the piston, insuring an even distribution of the fluid in the area to be infiltrated. The needle is first inserted perpendicular to the surface (Fig. 8). By withdrawing it to the skin and redirecting it at a slightly different angle, a wall of the solution is placed to interrupt the nerve supply or to anaesthetize the field of operation. At each subsequent withdrawal and insertion the needle is brought closer to and finally directed immediately under the skin. From the initial perpendicular injection the infiltration may be continued if necessary in the opposite direction from the same skin wheal. If an uninterrupted wall of infiltration has been secured, the apparatus may be laid aside without the necessity of again employing it in the same area.

(Fig. 9) Method of making an anesthetic wheal. The needle should be inserted into the corium at an angle of 45 degrees with the bevel upwards and the solution injected.

WILL THE SURVIVAL OF THE RACE DEPEND UPON CAESARIAN SECTIONS?

CASPER L. REDFIELD
Chicago.

During the present generation it has become more and more common for women to go to maternity hospitals where they can have the best of care at the births of their children. It is said that such hospitals have very greatly reduced the mortality of mothers at child birth, and the statement can hardly be doubted. But statistics seem to show that the deaths of mothers at child birth for the whole country have increased instead of decreased. Certain it is that embryotomy and Cesarian sections have greatly increased.

These facts show that something is operating year by year to make it more and more difficult for women to give birth to children. It is one thing to know that fact, and quite another thing to know what it is that is operating and how it is operating. It is the object here to explain the what and how of this trouble.

It requires muscular power to empty the uterus. Hence, muscular power is one element in the problem. It is well known that muscles not exercised become weak, and that joints not bent become difficult to bend. While these things are "well known," so little attention is paid to them that they are almost in the class of the unknown. Attention will be given to this end of the problem.

When a man takes up physical training in a gymnasium, or elsewhere, his muscles get strong as a result of exercising them, and there is no way of increasing their strength except through exercise. It is impossible to make an athlete out of a man by simply feeding him.

On the other hand, when a man who has been physically active takes up a sedentary life, his muscular powers gradually decline, and they continue to decline as long as he remains inactive. There is no exception to that rule. No amount of food and fresh air will enable a man to retain powerful muscles when he refrains from exercising them.

It is known that a man gains in physical strength by physical exercise, but it is commonly believed that such gain is strictly limited. Only twenty years ago I said that "within a few months or a year he reaches a physical strength and development beyond which further training will not carry him." I know better now, and I learned it first from the study of muscular development in the trotting horse. To take a single and simple case, under continuous training Goldsmith Maid continued to gain in trotting power from seven to seventeen years of age. That is equivalent to some thirty or forty years in the life of an adult man.

The fact is that any power which is continually exercised to a high degree will continue to develop up to near the end of life. And any power which is continually lying idle will continue to degenerate as long as the idleness continues. By tracing the rise and fall of different powers in different animals, in plants, in bacteria, and in protozoa, we learn that such changes are fundamental characteristics of protoplasm.

From powerful parents we get powerful offspring, and from feeble parents we get feeble offspring. That is a relationship which is known to exist, and is not denied by anyone. But persons may be made more powerful by exercise before becoming parents and the offspring will be born correspondingly powerful by inheriting the acquirements made by the parents. Or persons may become feeble by a failure to exercise for a considerable period before becoming parents, and the offspring will be born correspondingly feeble by inheriting the negative acquirements of the parents.

Now these things are established positively by investigating the power acquirements of parents and grandparents, and comparing such acquirements with the corresponding qualities found in descendants. From this investigation it is found that the old dogma to the effect that acquired characteristics are not inherited is a fallacy. In this connection the reader should note that we are talking about powers which may be measured in foot pounds, or some equivalent, and not about size, shape or color of any organism. The old dogma was not based upon any such investigation of facts.

When we first undertake to raise some wild plant from cuttings we frequently find it difficult to make them grow in that way. In a case of that kind, if we take a cutting from the first plant grown from a cutting, we find it grows a little easier the second time. If we take a cutting from the second plant grown from a cutting, we find it grows still easier the third time. And so on, time after time. Many of our greenhouse plants now raised almost exclusively by cuttings came originally from plants which would grow that way only with difficulty. The powers of growing from cuttings are developed by repeatedly exercising them.

A cutting may be from a branch, a root or even from a piece of a leaf. And a plant so raised will produce seeds which will grow,—a fact which should trouble those persons who believe in the continuity of the germ plasm. But a plant which is raised continually for many years from cuttings and not from seeds is not exercising its powers of growing from seeds, with the result that a plant so raised gradually but certainly loses its powers of producing seeds which will grow. Seeds from extremely old plants, like the sequoia, germinate with difficulty or not at all. Those trees grew from seeds, but in the two thousand years, more or less, since they so grew, the power of germinating has declined until it is now practically extinct.

A cow will produce a certain quantity of milk when she has her first calf; a larger quantity when she has her second calf; a still larger quantity when she has her third calf; and so on up to at least her tenth calf. That fact was determined by tracing the same cows through successive years of lactation. Milk-producing powers continue to develop under continued exercise of those powers.

Powers thus developed are inherited by the offspring. Under similar treatment, the later calves produce larger quantities of milk than do earlier calves of the same cows. Those bulls which are noted sires of large milk producers are themselves sons of old dams long in milk-producing service. These facts were determined by tracing this matter through three successive generations of Holstein-Friesian cows.

Heredity terminates at the union of the germs which form the embryo, and not at the birth of the calf. Milk production begins at the birth of the calf and not prior to the union of the germs. Now if we take a cow's first calf it will be evident that

(Concluded on page 42)

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The Medical Times Young In Its Fiftieth Year

The medical journal, like the man, can acquire arteriosclerosis or pernicious anemia. After fifty years the nutritive arteries of the MEDICAL TIMES are still soft and resilient and the journal's hemic component good. But whereas mere man must ultimately succumb to degenerative changes in his organism, the medical journal has but to transfuse new blood into its veins from time to time to ward off senility indefinitely—provided that the donors are properly chosen and do not set up agglutination and hemolysis in the units of the plant. Well, the destinies of the MEDICAL TIMES have been well safeguarded and here we are, in our fiftieth year, with our basal metabolism, blood sugar, renal output and blood pressure as good as ever, if not better. The spirit of youth still imbues us.

Since its foundation the MEDICAL TIMES has had but three editors, Egbert Guernsey, A. K. Hills, and the present incumbent. The service of Dr. Guernsey and Dr. Hills covered forty years. Dr. Baketel assumed editorial charge in December, 1911, when Mr. Romaine Pierson, President of the Medical Times Company, purchased the journal from Dr. Hills.

The MEDICAL TIMES was founded in the momentous year which saw the first ovariotomy performed, the oil immersion lens introduced, the effects of latent gonorrhea described, and the English act protecting the lives of infants passed. It was a good year in which to be born, and it ushered in a series of triumphs during the next decade following: the description of mastoiditis, the mastoid operation, retinoscopy, the identification of myxedema, early achievement with respect to smears and stains, the observation of transfusion hemolysis, the description of infantile scurvy, the Sayre corset, the isolation of salicylic acid, the introduction of the Paquelin cautery, the Porro and Sänger Cæsarean, Koch's tubercle, anthrax, malignant edema, traumatic infection and plate culture researches, the discovery of the gonococcus, the treatment of tuberculosis by rest and fresh air, the Weir Mitchell rest cure, the observation of amebæ in dysentery, corrosive sublimate antisepsis, cystoscopy, excision of the cancerous uterus, isolation of the streptococcus and staphylococcus, the description of the parathyroid, isolation of the typhoid bacillus, the introduction of iodine in surgery, resection of the pylorus, volume I of the Index Catalogue published, discovery of the plasmodium malariæ, nephropexy, gastroenterostomy, vaginal excision of uterine tumors, recognition of the epidemic nature of poliomyelitis, cell dvision investigations, excision of the gallbladder, and the discovery of the bacillus of glanders.

And now new stimuli challenge and inspire us: endocrinology, cancer research, psychotherapy, physiotherapy, radium therapy, and medical social service. The torch of progress must be passed on by able journalistic hands, if justice is to be done in our pages to the vast onrush of thought and achievement. We must continue to put our readers in debt to us as one of the worthy medical publications. Our high standard of excellence must be maintained and our functions properly adjusted to the prevailing needs of knowledge and practice. We must make our medical literature better while entertaining a serious and lofty conception of editorial duties and responsibilities, living up to what Lewellys Barker has postulated as the criteria of sound medical journalism. And, above all, we must not be timid in our discussions of those things that now threaten the morale of the profession and the foundational principles of our art. It will be admitted, we believe, that the policies of the MEDICAL TIMES in all these respects have been dictated by singular independence, and while we have not always won the complete approbation of our readers they will concede the preciousness of the editorial freedom that has been ours, a freedom which has made for the sense of responsibility with respect to the handling of subjects upon which opinions clash, and a freedom which has not been wittingly abused. We serve no special interests and our criticisms are inspired, we hope, by honest purpose. There is altogether too much tepidity in editorial comment.

We are oppressed to-day by a grievous burden of medical literature, and those who attempt to follow it avidly will be bound to incur mental indigestion. Such a journal as the MEDICAL TIMES may be compared with the small college as a medium of intellectual safety. Safety-first in the selection of one's reading dictates recourse to such a publication. Our aim is to interest the physicians of the country as a whole and to serve the immediate needs of practice—to make created knowledge easily accesible and to deal with progress in everyday clinical work. The MEDICAL TIMES is not local, or regional, but national in its scope.

While the MEDICAL TIMES seeks to advance

its prestige by publishing the papers of eminent members of the profession, it is constantly on the alert to discover ability among the younger men, and to the latter it offers its columns as hospitably as to the distinguished, if the contributions possess merit or distinction. Moreover, we have endeavored to foster style of writing in its intellectual, emotional and æsthetic aspects, as urged upon medical editors by Professor Barker. For all the reasons that have been stated we feel justified in appealing for loyal support.

Since the first of all medical journals was published in 1679 (*Nouvelles découvertés dans toutes les parties de la médicine* of Nicolas de Blégney) many attempts have been made to found periodicals that would abash competitors. Perhaps the most ambitious one was "Plus Ultra," published in Madrid for the three years ending about the beginning of 1921. It was a large and finely printed journal, using a high grade of paper and carrying elaborate illustrations, including colored plates. Contemporary biography, medical history, really comprehensive and adequate book reviews and practical papers of a high order were featured. But all these things, while desirable, will not of themselves make a great and successful journal. The "personality" of a journal, as of an individual, may be elegant and impressive, but woefully lacking in charm. It is the distinctive, not the distinguished, that appeals to the mind and heart. And it is the unique distinction of the MEDICAL TIMES as a manifestly real organ of the profession and not of an aloof group of the great that accounts for its success. The Plus Ultras fail, the dull many lag sadly, while the MEDICAL TIMES flourishes because expressing and counselling a grateful and numberless clientele as that attuned, democratic clientele's actual mouthpiece and mentor.

We take this occasion to wish our subscribers a Happy New Year.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

Birth-Control Fakers

If it be true, as the Dean of St. Paul's avers in his excellent article on birth control in a recent issue of the *Nation*, that the movement having to do with the control of parenthood and the limitation of families is the most important phenomenon of our time, that it is certain to progress, that it has come to stay, that it is a commonplace to affirm that voluntary limitation is being intensively practised on a wholesale scale, that human evolution has been steadily in the direction of diminishing fertility and increasing parental care, and that to attempt to arrest such a movement by legislation or exhortation or force is absurd, why are certain agitators at present much in the public eye as aggrieved and persecuted martyrs determined to suffer so much unnecessarily, if it be not that they have an itch for notoriety, hysteria and profits of some sort? One would honestly suppose, to listen to their screams, that but for them the increasing control of parenthood, a natural outcome of well-known forces, would give place to the old rabbit-like breeding. They are really not a wicked and daring lot of pioneers, but a bunch of boob-bumpers who ought to be deprived of the free advertising so stupidly accorded them by our simple ecclesiastics and cops.

The Pay Clinic.

The Cornell Pay Clinic may not have employed a press agent, but the publicity achieved by it was very impressive. The arguments advanced to justify the establishment of such a clinic are of the most specious character, and assume first of all that the medical profession is composed of morons.

Sometimes one does wonder, we are bound to confess, whether the aforesaid assumption is not the correct one.

(Concluded from page 40)

its heredity terminated before its dam exercised her powers of producing milk, and consequently that the calf had no exercise of milk-producing powers in its heredity nearer than its granddam. If we take a female first calf and mate her to a male first calf, then the first progeny of that union has no genetic exercise of milk-producing power nearer than its great-granddam. If we should continue to mate first calf to first calf indefinitely, we could get a long period in which no ancestor, from a hereditary standpoint, had exercised her powers of producing milk. Under such conditions, we would get cows which, generation after generation, would produce less and less quantities of milk, and if we continued the operation long enough, and nothing intervened to stop the process, we would get cows incapable of producing milk at all.

The first calf of the first calf in the female line in normal cattle breeding represents about 9 per cent. of all calves born, yet nothing of that kind appears in the pedigrees of hundreds of cows noted as extraordinary milk producers. The soundness of the logic as applied to cows is demonstrated by an investigation of the cows themselves. It also matches the other facts previously mentioned. And it matches a whole series of facts which I have given in other contributions but which need not be repeated here.

It is easier for a woman to give birth to her second child than to her first one; easier yet for her to bring forth the third one than her second one; still easier for her to produce the fourth one; and so on. Her powers of parturition continue to develop under repeated exercise of those powers. Contrarywise, the difficulties of the first parturition increase with the age of the woman. In other words, these powers decline when not used, and this is a case of the decline of inherited powers.

The heredity of a child ends at its conception, but the efforts made by its mother to give birth to that child come at a later time. As a consequence, those efforts form no part of the child's heredity, and the first child must go back to its grand-mother to find any such efforts in its inheritance. If a first child marries a first child, then the first child of that union has in its inheritance no exercise of the powers involved nearer than its great-grandmother. If we should continually have first child mated to first child we would soon have women incapable of giving birth to children, and Cesarian sections would be an absolute necessity for the preservation of such a line.

The first child is produced before its mother exercises her powers of giving birth to children, and the second after she has exercised those powers only once. The third child is produced after she has exercised them twice; the fourth after she has exercised them three times; and so on.

If we assume a community in which each woman produces two children, we will have one of those produced before she exercises her powers of parturition, and one after she has exercised them once. The average inheritanc by those children of powers a parturition developed by the exercise of their mothers would be represented by one-half of one time. Assuming another community in which each woman produces six children we will find that the corresponding inheritance of each child is represented by the mother exercising those powers two and one-half times. The difference here is five to one, and the corresponding inheritances makes it much easier for the average daughter of a six-child family to give birth to children than it is for the average daughter of a two-child family. Investigations into the inhteritance of powers developed by exercising them show that such differences are compounded when the same thing is repeated for two generations, and further compounded for each generation of repetition.

The investigations of Dr. Crum into the size of American families show that the average number of children per wife declined from 7.4 in the period previous to 1700 to about 2.5 during the decade 1880-89. My investigation of the same stock gives 5.72 children per mother during the eighteenth century. In Chicago, with a large foreign population, the birth registration of 1913 gives an average of 3.27 children per mother.

These are simply examples of the well known fact that the size of families has been declining for 200 years or more. With each decline in family size there is a corresponding decline in the extent to which mothers exercise their powers of bringing forth children. With each decline in the extent of such exercise per generation there is a corresponding decline in the inherited powers of parturition.

Each decrease in family size makes women progressively weaker and weaker. We see that result in the increasing difficulty experienced by women in bearing children. We also see it in the increased deaths of mothers in child birth, and the increased use of embryotomy and Cesarian sections to avoid such deaths.

Monadnock Blk.

THE NATIONAL VALUE OF GOOD HEALTH.

W. F. McNUTT, SR., M.D.
San Francisco, Cal.

When will the taxpayers wake up to the enormous cost of unnecessary ill-health? Perhaps, if some one would carefully estimate the amount in dollars, the taxpayers might prevail on the government to appoint a committee of investigation. It would also be a matter of great importance if we had a careful estimate made of the loss to the nation, by the unnecessary premature deaths of the competent. Very few appreciate the asset in dollars of good health to a nation. It is considered axiomatic that the average man in good health is worth twice the value to the nation, of the property he represents. The cost to the nation of sickness is very great, but the expense of the necessary unavoidable sickness of the competent cannot be considered a waste. The cost to the nation of the unnecessary care and sickness of the incompetent is much greater, and a waste.

We build hospitals, asylums, homes, etc., for the unnecessary incompetent and the cry is for more. Yet the syphiletic, insane, feeble minded, drunkards, etc., continue to propagate. There seems no prospect of lessening the supply. While the children of the above class are, as a rule, not long livers, and their premature deaths are again the expense to the state while they do live, in hospitals, asylums, prisons, etc., is a waste, an unnecessary tax.

Much has been written on this subject and many appeals have been made to the government for a national department of health. Nothing can be more absurd than that the greatest and most important asset of a nation should not be considered worthy of a special department in our national government. At the present time, many subjects that should be under the management of a competent health department, are relegated to various departments where they receive secondary consideration. Often, probably because the head of the department to which the special subject was relegated was not interested in the matter or probably was not familiar with the subject.

A few cities are fortunate in having a well-informed and energetic health office, whose influence and work has been the means of doing much to improve the sanitary condition of his community. Too often, however, he is handicapped by political managers. When one looks back fifty (50) years, as the writer can, the improvement in the hygiene of city, state and nation is encouraging. Great bodies move slowly, and so long as they keep moving in the right direction, we can report progress.

Too many of the workers in charity societies and associations spend their energy and money to ameliorate symptoms, on the humane principle, the harvest is ready and the reaper few. Perhaps the seeming impossibility of removing the cause of the misery, poverty or illness is too discouraging. When the life insurance companies find that the average longevity of the thousands who carry life insurance is becoming lessened after forty-five (45) years of age, the matter is serious, more serious than surprising. When so many of the people of the United States indulge in *overeating* and expend $3,000,000,000 annually in alcoholic liquors and tobacco, there should be no surprise that the longivity of the insured is being lessened.

When a young man with a good family history, who should live, barring accidents, his full three score years and ten, dies prematurely say at forty (40) or fifty (50) years of age, the loss to the state by his premature death and the expense of his illness, may be several hundred dollars on several thousands, as the case may be.

One can imagine the surprise to the health officer, and the indignation and shock to the family and friends of the prematurely departed, if the attending physician in many cases, were to sign the certificate of death, "slow suicide committed deliberately by over-indulgence in food, alcoholic liquors and tobacco." Yet the attending physician would be stating in too many cases the exact facts. In the meantime, the relations and friends of the prematurely departed are consoled, comforted and reconciled by the solemn recital of the legend, "The Lord giveth and the Lord taketh away, blessed be the name of the Lord,"

"The solemn angel of eternal peace,
Has waved the wand of mystery o'er his head
And bade the pulses cease."

Cause of Tabes Dorsalis, Dementia Paralytica and Praecox

Van Trotsenburg is inclined to explain the lack of success in these conditions from treatment for syphilis as the result of some superposed or underlying infection, most probably tuberculosis. With dementia praecox there is much to sustain the assumption that tuberculosis is the primary disease.—(*Nederland. Tiid. v. Geneesk.*, July 30, 1921.)

NEPHRITIS CLEARING UP AFTER THE REMOVAL OF INFECTED TEETH.

A. L. CRAMER, D.D.S.,
ORAL SURGEON TO WYCKOFF HEIGHTS AND BIKUR CHOLIM HOSPITALS,
Brooklyn, N. Y.

R. M., aged forty-two, white, female weighing one hundred and thirty-four pounds, came under the observation of Dr. Carl O. Fischer on April 20th, 1921, suffering from headaches, dizziness, choking sensations, palpitation of the heart and discomfort after eating.

Examination by Dr. Fischer revealed a pale, weak, anemic, middle-aged woman apparently quite sick. The head showed nothing of any importance with the exception of a large number of carious teeth. Lungs were negative. Heart showed a marked tachycardia. The heart sounds were of poor quality. Blood pressure was one hundred and eighty-eight systolic, and seventy-four diastolic. There was tenderness over the entire abdomen.

The laboratory findings were as follows: extremely large amount of albumin, many hyaline and granular casts, and a few pus cells.

Surgical treatment of the teeth was postponed on account of the extreme weakness of the patient and the usual medical treatment, viz., rest, diet, digitalis, etc., was administered by Dr. Fischer.

Three weeks later, the nephritis still continuing, the patient was referred to me for the examination of her teeth. Six teeth were found to be infected. They were removed and the sockets were curetted.

Nothing further was heard from the patient until six months later, when Dr. Fischer reported the following: Patient feeling fine and eating full diet, weight one hundred and fifty pounds, blood pressure one hundred and thirty-four systolic, sixty-two diastolic. Urine shows a few pus cells, but no albumin or casts.

Mirabile Dictu.

In a well known medical college in the eastern section of the country an examination was recently held. The answers as given by third year students were sufficiently enlightening to be reproduced.

Q.—Describe vaccination against smallpox.

A.—(1) The place chosen is the arm of the left hand. (2) In babies any arm may be used.

Q.—Discuss the control of venereal diseases.

A.—(1) The State should see that dances are respectful. (2) By the illumination (elimination?) of factors which spread the disease. There is a specific prophylaxis for man but none as yet for male.

Q.—Discuss the prevention of tetanus.

A.—(1) All persons with tetanus should be isolated. (2) Cartilage (cartridge?) wounds are likely to become infected. (3) The type of wounds most likely to tetanus infection—(1) wounds on parts of body unprotected by hair, as on hands, face, back, feet.

Q.—Discuss the prevention of rabies.

A.—(1) Inject Pasteur's specific antitoxin in all those suspected of having been bitten by dogs. (2) Virus becomes attentuated so that when it is injected it will produce rabies in 6-7 days. (3) After 6 or 7 days remove cord aseptically from rabbit and cut up in three pieces. Suspend over solution of caustic potash in a dark room. (4) Keep it there for 14 days under a constant temperature usually 23 Deg.C. Avoid alcohol and tea. (5) Pasteur treatment has reduced the mortality to almost nothing.

The Physician's Library

A Text Book of Surgical Anatomy. By William Francis Campbell, A.B., M.D., F.A.C.S., of Brooklyn. Phila.: W. B. Saunders Co., 1921.

To the reviewer's mind this book deserves a place in the library of every physician, especially of the general practitioner, and the one who intends to consider surgery as his own special domain of work. It is also of extreme value to the student who desires to correlate his anatomy with points of practical value.

The author has naturally included every region of the body, describing the essential anatomical points with such conciseness and brevity that there is no room for misinterpretation. And along with the anatomy he has included not only the surgery of the part, but the surgical application of this anatomical knowledge.

There are a number of black and white plates which are unusually lucid in their illustrations of regional anatomy and which greatly enhance the value of the book.

The Spleen and Some of its Diseases. By Sir Berkeley Moynihan, F.R.C.S. of Leeds. Phila: W. B. Saunders Co., 1921.

This monograph was the basis of Sir Berkeley Moynihan's Bradshaw lecture at the Royal College of Surgeons of England last December.

It is a very comprehensive work on this only too little known organ, beginnin with its anatomy, surgery, and functions. The hsitory of its surgery is both amusing and interesting.

The author treats interestingly the pathology of the spleen and the different diseases in which the splen participates, either in a major or minor part, describing among others pernicious anemia, leukemia and hemolytic jaundice.

He then devotes space to a study of the liver in some of its relations to the spleen. He pleads for a consideration of hepatic diseases as variations of the same pathological process, wherein the type of dysfunction can be definitely determined by a proper consideration of all the factors present. He also scoffs at those who consider the spleen as the only pathological unit in the abdomen and encourages the quest for a more definite etiology in many conditions.

The resumes of splenectomies for various maladies of this organ are of great value, and his schematic diagrams of the pathology of these diseases are also good.

A work of this type is of great value to anyone at all interested in these conditions.

History of Medicine, With Medical Chronology, by Lt. Col. Fielding H. Garrison, Medical Corps, U. S. Army. Third Edition, Revised and Enlarged. 942 pages with 257 portraits. Philadelphia and London: W. B. Saunders Company, 1921.

The eminent author of this book has performed a lasting service to the profession in bringing out this splendid history. One would hardly expect that in a history of medicine it would be possible to contribute a large amount of new matter, but Col. Garrison, has brought out the newer findings of various investigators of ancient and modern medicine and has particularly discussed the newer findings in the history of pediatrics, hygiene and military medicine, and has opened up a vista on the work of the medical departments of the various armies which took part in the World War. The bibliographies have been much enlarged and improved and there is a general brushing up of a great variety of subjects.

Col. Garrison stands at the head of medical historians and his work is a monument to his industry and erudition.

Disease of the Skin: Richard L. Sutton, M.D., Professor of Diseases of the Skin in the University of Kansas. 1132 pages, 969 illustrations; St. Louis: C. V. Mosby Co., 1920.

This fourth edition contains not only all the valuable fundamentals contained in the other editions, but a considerable amount of new material. The book is especially rich in references which are not handled in the usual method of merely referring to the subjects, the author and the place of publication. Dr. Sutton has given a short, succint description of the book or the article to which he is referring. This adds very materially to the value of his work and is a distinct aid to men who are looking for literature on dermatological subjects.

(Concluded on page 28)

The Management of an Infant's Diet

Inorganic Salts

Recognizing the rapid growth of bony structure during infancy, we are aware of the necessity of having an ample supply of mineral salts in the diet of infants. We have always considered this point, and during the process of manufacture of Mellin's Food the salts present in the grains used are retained and incorporated into the finished product.

On account of the deficiency of potassium in diluted cow's milk as compared with human milk, an amount of this important salt is added to Mellin's Food, which together with the natural salts of the grains used in making Mellin's Food, gives a content of mineral salts more in accord with those present in human milk.

The following analysis gives the percentage of various salts contained in 4.30 parts of salts—the percentage of inorganic constituents in Mellin's Food:

Bicarbonate Potassium	**2.536**
Phosphate Potassium	**.897**
Phosphate Calcium	**.037**
Phosphate Magnesium	**.213**
Phosphate Iron	**.016**
Chloride Sodium	**.097**
Sulphate Sodium	**.131**
Sulphate Potassium	**.383**
	4.310

From the foregoing and taking into account the salts in whole milk, it will be seen that all Mellin's Food modifications contain a total salts content slightly in excess of that present in human milk; thus a physician is assured of an adequate supply of bone-forming material for any infant fed according to the

Mellin's Food Method of Milk Modification

SODIUM GLYCOCHOLATE COMP.
TABLETS

Pil. Nephritic **Alvinine Suppositories**

AROMATIC LAXATIVE
Preparation of Cod Liver Oil Extract

WAMPOLE'S

Creo-Terpin Comp. **Phospho-Lecithin**

Bismuth Hydrate Comp.

Renaltone **Tonga Salicyl**

Antiseptic Vaginal Cones Plain or with Ichthyol

WRITE FOR LITERATURE

HENRY K. WAMPOLE & CO., Inc.
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In addition, he has included a number of new diseases in his text and has made many improvements which render the book one of the very best in the field of dermatology. The author's own high standing and his tremendous practice give one a feeling of security in regarding him as an authority.

"The Endocrines," by Samuel Wyllis Bandler, M.D., Published by W. B. Saunders Co., 1921.

This book on a subject only too little known is extremely interesting and instructive.

Dr. Bandler considers the secretions of the internal glands mainly from the standpoint of their relationship to gynecology, but he also brings out some salient points on the effects they may have on the individual, altering their relations to external stimuli producing fear, anger, hatred, love, etc. He explains the actions of the individual glands and the relationship of their inter-reaction.

In his second chapter on Environment and Heredity, he brings out many points which are valuable to the general practitioner and to the layman. Among these are the early training of children, methods of changing the child's reactions of fear into those of pleasure and delight, how to answer the child's questions in regard to procreation without falsifying and yet imparting the information in a manner hat will not arouse their curiosity or make this function seem unusual or mysterious.

In a later chapter are found a number of his clinics at the Post Graduate Hospital which are also of great interest to every physician.

These two chapters alone make the book one deserving a place in the library of every physician, aside from material contained in the intervening chapters, and a large number of case reports.

1920 Collected Papers of the Mayo Clinic, Rochester, Minn. 1392 pages, 446 illustrations. Philadelphia and London: W. B. Saunders Company.

The 1920 papers from this well-known clinic are more interesting than usual. The book contains 20 papers on the alimentary tract; 13 on the urogenital organs; 11 on ductless glands; 3 on the heart; 11 on the blood; 10 on the skin and syphilis; 38 on the head, trunks and extremities; 1 on the nerves; 3 on technic, and 21 on general subjects.

Mrs. Mellish, the editor, has made a most happy arrangement and as a result, we have a book which is a veritable post-graduate course.

Diseases of the Digestive Organs. By Charles D. Aaron, M.D., Professor of Gastroenterology in the Detroit College of Medicine and Surgery. Third edition; 904 pages. Philadelphia: Lea & Febiger, 1921.

Since gastroenterology has established itself as a definite specialty, much more attention has been paid to the diseases of the gastrointestinal tract. The purposes of this book is to put all the resources of the specialist at the command of the general practitioner, and he has given him every detail which would aid him in the diagnosis and treatment of diseases of this part of the anatomy. Not only is all the technical matter of diagnosis very clearly brought out, but special attention has been paid to dietetic treatment and to such measures as hydrotherapy.

The book is very thorough and covers every topic which could properly be included under a general gastroenterological heading. The addition of excellent photographs and colored plates enlightens the text very materially.

Keeping Qualities of Market Samples of Neoarsphenamine While in Ampule

Geo. B. Roth records investigations made at the Hygienic Laboratory for the purpose of determining the keeping qualities of neoarsphenamine. Products from four of the largest domestic manufacturers were used, and the age of preparations in no case was over three years. Conclusions:

1. Commercial neoarsphenamine is a relatively unstable substance in ampule.

2. Age, heat and incomplete drying of the substance before ampuling are factors in causing deterioration.

3. Deterioration is shown by changes in color, mobility in ampule, toxicity, solubility and odor.

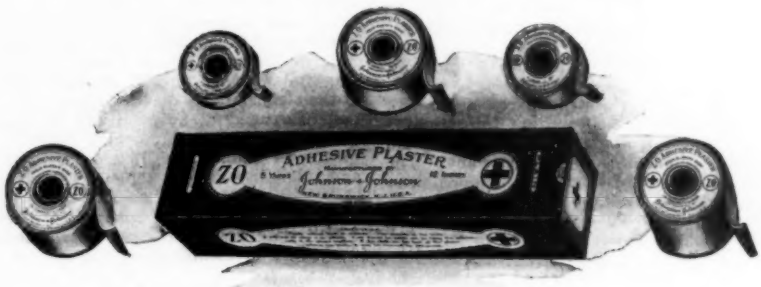
4. a. In order to secure further data on its keeping properties, the date of manufacture might be given on the label of all lots issued; b. neoarsphenamine should be kept under conditions similar to those required for vaccines; that is, at icebox temperature.—(*Public Health Reports*, October 14, 1921.)

Red Cross Absorbent Cotton

Appeals to the Careful Physician

because it fulfills every requirement. In the first place not one fiber of waste is used—nothing but carefully selected new cotton. Then it is put through processes which insure perfect absorbency and absolute sterility. And finally it is so packed that even when the cotton is taken out of the carton its complete encasing of tissue—covering all surfaces including the edges—protects it from exposure and infection. And you are assured, when buying Red Cross Absorbent Cotton, that each package—from the half-ounce to the one-pound—contains full weight of cotton.

Cold Weather Has No Effect On "ZO" Adhesive Plaster



Even though the plaster has been carried around in the cold, the physician may take it out of his bag and immediately apply it without any preliminary warming. Knowing that he is able to depend on the plaster's adhesiveness, the busy physician is able to work rapidly without interruption. You will be pleased with the satisfactory results obtained from the use of "Z O" Adhesive Plaster.

Johnson & Johnson

NEW BRUNSWICK, N. J., U. S. A.

We become reminiscent when Anniversaries appear

This is something said of us many years ago

From the *N. Y. Medical Record*, Dec. 6, 1879:—"Last May I had under my care fifteen cases of Pertussis (Whooping Cough) in the "Sheltering Arms."

"For a week the treatment was quinine bromide, but the disease was not arrested. An apparatus for vaporizing Vapo-Cresolene was then employed, and the quinine stopped; almost immediately the paroxysms were relieved.

"My colleague did not use the vaporizer during his service. When I again came on duty, I found two cases well established, the paroxysms very frequent, and the children much exhausted. Several other children were coughing with that quick, percussive cough so characteristic of the first stage.

"The Vaporizers were started, and after forty-eight hours the paroxysms had ceased, no more whooping or vomiting: sleep was obtained. Though children were admitted to the institution who had not had the disease, no new cases broke out and the epidemic was at an end.

"The apparatus is simple, inexpensive, and I believe, unequalled in the treatment of Whooping Cough.

"The vapor is not injurious to healthy persons. It has a beneficial effect in allaying the irritation and desire to cough in Bronchitis. I earnestly recommend it, and shall hope to see results published.

JOHN MERRITT, M. D., Brooklyn, N. Y.

Vaporized Cresolene is today probably the most widely used treatment for whooping cough

Vapo-Cresolene Co.

62 Cortlandt St. New York

Salvarsan Adulterators Receive Prison Sentences

The Salvarsan adulterations in Germany and other countries, which caused so much difficulty in the drug markets during 1919 and 1920, were recently taken up by the Criminal Court of the County of Hamburg. After a trial lasting fourteen days, in which many experts were examined, the manufacturer, Gerloff, and his superintendent, von der Heyde, were sentenced to three and one-half years in prison and to five years' disenfranchisement. Sixteen defendants received two-year prison sentences each, and sixty-two others who had conducted a flourishing business in adulterated Salvarsan were fined 20,000 Marks. Six persons were acquitted.

Those convicted of adulteration had manufactured and sold a yellow powder from substances which were not only worthless but dangerous to health. It bore a striking resemblance to the genuine Salvarsan and the labels and packing were so perfect an imitation of the genuine Hoechst product that it could easily be mistaken for the genuine even by physicians. The convicted men made a large amount of money by handling these adulterated products as they were selling this stuff at a time when raw materials were scarce and the entire world was crying for the genuine German product, and it was easy to find purchasers.

The judge in his charge to the jury condemned the unscrupulousness by which the defendants had endangered the lives of thir fellow-men for the sake of greed and he asserted that the good name of the German industry had been injured. He felt that another grievous factor in these adulterations was that the idea had gotten abroad that German manufacturers were attempting to sell poisonous medicines for ulterior purposes and such charges had appeared in foreign newspapers. The severe punishment inflicted upon those convicted will, it is believed, put an end to further adulterations of Salvarsan and will discourage possible repetitions.

Vacancies on the Medical Staff of the Good Samaritan Dispensary.

The Trustees of the Good Samaritan Dispensary in the City of New York desire applications from candidates for appointment to the position of Admitting Physician, which requires four hours' service as examining physician daily, Sundays and holidays excepted, at a salary of $720 a year, and to the position of Attending Surgeon with a three-hour service daily in the forenoon, Sundays and holidays excepted, with a salary of $540 a year.

Applicants are restricted to physicians who have served at least one years continuously after taking their degree in medicine in a general public hospital as a regularly appointed interne in the grades of junior, senior and house physician or surgeon and who are able to converse in German. Each applicant should state the date and place of his graduation with a summary of his medical experience, accompanying his letter with testimonials as to his character and professional standing. All candidates will be examined as to their knowledge of German. In addition candidates for the position of Admitting Physician will be examined with special reference to their capacity as diagnosticians and candidates for the position of Attending Surgeon will be examined as to their practical familiarity with surgical work. The service will commence as soon after January 1, 1922, as may be arranged and eligibility at that time is sufficient.

Applications should be addressed to Dr. Louis F. Bishop, President, and will be received until December 30, 1921, after which date applicants will be notified by letters of the time and place of examination.

New Laboratories for Abbott's

A substantial group of eight concrete buildings in North Chicago looms as evidence of the growth that is said to follow true service.

When the war cut off the import of medicinal chemicals used quite generally by physicians in this country, The Abbott Laboratories were among the first to provide for the urgent home demands. Such drugs as Barbital, Procaine and Cinchophen were produced in this period by its chemists under license from the Federal Trade Commission. Since that time there has been a continuously increasing demand for these and other high grade synthetics, under the Abbott label, necessitating an enlargement of manufacturing space and facilities.

Along with this, the research department of the firm is being enlarged and valuable new agents for the physician's use are being developed.

The executive offices of The Abbott Laboratories will be maintained at the present address, 4739-53 Ravenswood Avenue, Chicago.

Announcement

COLLENE NOW AVAILABLE

A Perfect
Silver Colloid
In Permanent Suspension

Thos. Leeming & Co. of New York City take much satisfaction in being able to announce to the medical profession that they have been selected as sole U. S. Distributors for COLLENE and the other colloidal products prepared by the Collene Laboratories, Inc.

Medical men who have had an opportunity to use COLLENE and observe its notable efficiency as a non-toxic, and non-irritating germicide and antiseptic, will be pleased to learn that an ample supply of this new silver colloid is now available.

The remarkable possibilities of colloidal therapy are especially emphasized in COLLENE, a perfect silver colloid in permanent suspension, representing a colloid strength of .05% (1-2000).

In brief, the exceptional germ-destroying antiphlogistic and healing properties of COLLENE enable it to accomplish results in the treatment of infected wounds, abscess cavities, sinuses, ulcers, deep burns, eye, ear, nose and throat affections, and diseases of the urethra, bladder and rectum, that prove it to be one of the most potent and satisfactory means of controlling local infections at the physician's command.

COLLENE is procurable in eight and sixty-four ounce bottles, ready for use.

Dosage Notes

In the treatment of wounds, cuts, burns, etc., use COLLENE, full strength or diluted one-half.

In nose and throat affections COLLENE may be used as a spray or gargle in one-half strength dilutions.

In eye and ear diseases, a one-half to full strength solution of COLLENE may be used with impunity.

In urethral, bladder, rectal troubles, COLLENE should be used in one-quarter to one-half dilutions or full strength.

Furuncles, abscesses, carbuncles, and other superficial purulent infections may be aborted by wet compresses of COLLENE used in full or half strength.

For samples and clinical reports, address,

THOS. LEEMING & CO.

130 William Street, New York City

Sole Distributors for

THE COLLENE LABORATORIES, Inc.
of New York City

The Prevention of Weak, Tender Feet

is one of the notable benefits that logically result from wearing

O'Sullivan's Heels

It is a well known fact that abnormal conditions of the foot structures are often brought about by shoes with hard, rigid heels, and lacking in flexibility. Free movement of the muscles is prevented, muscular tone is lost, and sagging of the arch naturally tends to follow.

O'Sullivan's Heels, however, by reason of their elasticity and springiness assure a greater latitude of muscular action. The foot muscles thus receive more exercise, the local circulation is increased and the foot structures are kept in a nearer normal condition.

The use of O'Sullivan's Heels, therefore, is a simple but exceedingly effective means of promoting the health and strength of the feet.

O'SULLIVAN RUBBER CO., Inc.
New York City

Treatment of Syphilis in the Male

R. W. MacKenna has had experience in treating syphilis for 21 years, for 10½ years before salvarsan was introduced. Although this discovery revolutionized the treatment, it was quite possible in the old days to obtain excellent results from the use of mercury and potassium iodide. He is of the opinion that although modern research has contributed enormously to the efficient treatment of syphilis, the chief contribution has been not a therapeutic but a diagnostic one. There is no general consensus of opinion as to whether it is better to make use of massive doses of salvarsan, or to give smaller ones more frequently. The author is an advocate of the former, partly because it gives the greater therapeutic effect in the shortest time. Small frequent doses are apt to confer powers of resistance to the treponema. He believes in administering salvarsan and mercury simultaneously. Intramuscular injections of mercury are most satisfactory for routine hospital treatment. In obstinate cases, mercurial inunction is of great value. After cautioning against insufficient treatment and a blind reliance in the Wassermann test the author suggests 14 points for discussion. He then gives as follows his scheme for the treatment of an adult male suffering from secondary syphilis (Wassermann positive), but otherwise healthy.

(A) A full course of neo-salvarsan consists of ten weekly intravenous injections as follows: 0.45, 0.6, 0.9, 0.9, 0.9, 0.9, 0.9, 0.9; rest 14 days; then give 0.9 and 0.9. Total of 8.25 grams.

(B) A full course of Hg. injections consists of 12 weekly doses each of 7 cg. of 40 per cent. grey oil.

1. Begin by giving (A) and (B) simultaneously.
2. Wait a month; then test blood and cerebrospinal fluid. If both are negative, test again in three months. If still negative wait three months, then give half (A and half (B).
3. If reaction is positive at the first test, after completion of the first course, give one-half (A) and (B) in its entirety; and repeat if necessary at the end of three months until the Wassermann reaction becomes negative.

2nd Year: Even in the absence of all symptoms, the Wassermann being negative, give one-half (A) and (B) in its entirety. This course may be divided into two parts and given at intervals of 6 months.

3rd Year: No symptoms; Wassermann negative. Give one-third (A) and (B) in its entirety with potassium iodide for 3 months, dividing the treatment up over the year.

4th Year: No symptoms; Wassermann negative. Give one-quarter (A) and (B) in its entirety with potassium iodide for 3 months, spreading treatment over the year.

In all cases the blood and cerebrospinal fluid should be tested at regular intervals.—(*Brit. Med. Jour.*, September 24, 1921.)

The Use of Pluto In Intestinal Toxemia

In the symptom complex known as intestinal toxemia, which includes malaise, anorexia, headache, gastric and vasomotor disturbance, and at times painful joints, there are two and possibly three important factors.

First, the absorption of retained toxins from the large intestine. Second, the disturbance of production of the normal digestive fluids in the stomach and small intestine. Third, the often present mechanical effect of a partially impacted colon.

To overcome all of these etiological factors, the use of Pluto Water is recommended. By its use toxins are swept from the bowel, the gastric and intestinal glands are brought to a normal function and dried fecal masses are softened and broken up and evacuated without griping or delay.

The action of Pluto Water is that of a hydrogogue laxative. It produces fluid stools, and acts as an intestinal bath without irritation or bad after-effects.

The French Lick Springs Hotel Co., of French Lick, Indiana, will be glad to send physicians samples and diet lists on request for experimental purposes.

A Definite Indication

Cough unaccompanied by expectoration is a frequent cause of aggravation and extension of the inflammatory process in bronchitis. In the dry, congested stage, treatment should aim to increase the mucous secretion, and, until a free secretion is established, to soothe the mucous membrane and prevent the harmful unproductive paroxysms of cough.

An ideal combination for this purpose is Syrup Cocillana Compound, P. D. & Co. This is an ethical preparation. Its gold color is rather unusual for a cough syrup; and the peach flavor and aroma are particularly agreeable.

Besides these points of pharmaceutical superiority, there can be no question of the fact that the ingredients are selected with a view to producing a therapeutically effective compound.